5

The Economic and Political Analyses of BART Land Use Impacts: A Planning Study of the Rockridge Station Conflict

By

[illegible]

B.Arch. (McGill University, Canada) 1966
M.Arch. (University of California) [illegible]
M.C.P. (University of California) [illegible]

DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

NONCIRCULATING

in

City and Regional Planning

in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA, BERKELEY

Approved:

Committee in Charge

[illegible]

An Economic and Political Analysis of BART Land Use Impacts: A Planning Study of the Rockridge Station Conflict

RUSH
Sep
ENVI

By

Andrejs Skaburskis

B.Arch. (McGill University, Canada) 1966
M.Arch. (University of California) 1970
M.C.P. (University of California) 1972

DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

City and Regional Planning

in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA, BERKELEY

Approved: Frederick C. Collignon
Michael B. Teitz
Thomas J. Rothenberg

Committee in Charge

(1977)

DEGREE CONFERRED, JUNE 1977

AN ECONOMIC AND POLITICAL ANALYSIS OF BART LAND-USE IMPACTS: A PLANNING STUDY OF THE ROCKRIDGE STATION CONFLICT

Copyright © 1977

by

Andrejs Skaburskis

ACKNOWLEDGMENTS

I would like to acknowledge my thesis committee, Frederick Collignon, Michael Teitz, Douglass Lee, Jr., and Thomas Rothenberg. Without their advice and encouragement this work would not have been completed. I would also like to thank my wife, Jacqueline C. Vischer for her help in editing the preliminary drafts and for persevering with me during the process of writing this paper.

I am grateful to the Alameda County Assessor's office for permission for indirect access to their machine-readable files on single-family houses. I would like to thank Don Hutchinson, the Assessor, for access to the machine-readable files; Travis Highfield, the Director of the Standards Division, for his cooperation and assistance; and Robert Ellis, Appraisor, for computer programming and data management. Without their help, the empirical chapters showing the BART station's impact on property prices, would not have been written.

Thanks also to Marilyn Reynolds of the San Francisco Bay Area Metropolitan Transportation Commission for the data management that facilitated the analysis of the Rockridge residents' expectations and reactions to BART. I would also like to thank the Metropolitan Transportation Commission for their permission to use extracts from my paper on "The Impacts of BART on Property Values:.A Case Study of the Rockridge Area", (Report No. WP-19-5-76) in the empirical section of this work.

I am indebted to Horst Rittel and Melvin Webber for introducing me to the concepts of 'wicked problems' and 'problem boundaries'. These concepts were used to generate the thesis of this paper and without them the approach to the Rockridge planning problem would have been far less rich.

I would like to thank Katharine Cook and Norma Montgomery for their secretarial assistance and for typing and re-typing drafts of this report.

TABLE OF CONTENTS

INTRODUCTION. 1

PART ONE LAND USE PLANNING IN ROCKRIDGE. 4

Chapter 1 Introduction to Rockridge. 7

- The Physical Characteristics 7
- The Demographic Characteristics. 14

Chapter 2 The Historical Setting of the Land-Use Conflict. 19

- The Introduction of BART and the Grove-Shafter Freeway . . 19
- Examples of the Oakland City Council's Land-Use Policies in the Sixties 22
- The Projected BART Land-Use Impact 25
- The Perceived Problem. 30
- The First Reactions. 35
- Summary. 38

Chapter 3 Expectations and Reactions 40

- The Data 41
- The General Approach 43
- Involvement in Community Activities. 43
- The Expected Land-Use Impact 48
- Reactions. 54
- Expectations, Reactions and Community Involvement. 55
- Summary. 59

Chapter 4 The Rockridge Land-Use Plan. 61

- The Consultants' Impact Statement. 62
- The City Planning Department's Report. 66
- The Immediate Reactions. 69
- The Emergence of an Organized Community Response 71
- The Rockridge Land-Use Plan. 74
- Conclusions. 78

PART TWO THE MARKET's RESPONSE 82
Introduction 83
Chapter 5 Theory 85
Initial Assumptions. 85
The Muth Model 86
The Effect of a Discrete Access Improvement. 95
The Differentiated City. 100
The Non-Malleable Housing Stock. 102
The Effect of Externalities. 103
The Effect of Transaction Costs and Property Taxes 106
The Effect of Imperfect Knowledge. 107
Conclusions. 109
Chapter 6 Method 112
The Research Strategy. 113
Precedent Studies. 117
The Data 119
The General Model. 122
The Functional Forms 125
The Variables. 129
The Approaches 132
The Cross-Sectional Approach 133
The Before-After Approach. 136
The Cross-Sectional-Longitudinal Approach. 141
Chapter 7 Findings 145
Description of Sold Houses 145
Regression Results 154
Conclusions. 167

PART THREE THE NATURE OF THE PROBLEM. 175
Introduction 176
Chapter 8 The Problem of Bounding Planning Problems. 178
The Bounding of Planning Problems. 178
The Purpose of Impact Statements 179

The Purpose, Intent and Consequences of Plans. 181
The Context of Land-Use Conflicts. 183
The Context of Land-Use Decisions. 185
Summary. 187

Chapter 9 The Manner of Bounding City Planning Problems 189
The Planner's Role 191
Boundaries Due to the Detachment of Scientific-Technical Planning 192
Boundaries Inherent in Land-Use Models 193
Boundaries Resulting from the Long-Range View. 194
Boundaries Resulting from the Selective Use of Empirical Knowledge. 195
Boundaries Resulting from the Selection of Applicable Theory 196
Boundaries Inherent in the Scientific-Technical Approach . 199
Boundaries Resulting from the Aesthetic Appeal of Technical Solutions. 203
Boundaries Resulting from the Expert's Need of a Solution. 204
The Role of Scientific-Technical Intelligence in Land-Use Planning 206
Summary. 208

Chapter 10 Costs, Benefits and the Bounding of the Rockridge Land-Use Planning Problem. 210
The Direct Costs and Benefits of Development 210
Other Direct Costs Associated with Development 214
New Boundaries on the Problem. 216
Further Changes in the Problem's Boundaries. 219
The Move Out from the Cost/Benefits Framework. 222
Summary. 226

Chapter 11 Conclusions 228
Statements of the Rockridge Land-Use Problem 229
The Means of Effecting the Solutions 233
The Planner's Desire to Support a Given Course of Action . 235

References 238

"When the first nomadic hunter drove another from the water hole about which he found his quarry, a land use conflict took place. When the early American frontiersman pushed into the wilderness with his gun, powder horn, shot pouch, and hand axe to protect himself from the prior claims of the aborigines, a land use conflict took place. So did one occur, too, when the later settler in the same community intimidated the federal government's land agents who were attempting to expel the earlier settlers from lands they had never legally acquired from the sovereign power that owned them. And again one occurred when the western cattleman 'shot up' the sheepherder's flock and, in solemn assembly with his peers, voted favorably for 'law and order' by approving a resolution to his state's legislature asking that it declare the killing of a sheepherder to be a misdemeanor. Again did land use conflict arise when the increasing demands of California placer miners for water for their sluice boxes led earlier users to declare the doctrines that ripened into the American common law of 'first in time, first in right' embodied in water law.

". . . Land use conflicts run like a thread -- or like a number of threads -- through the fabric of all cultural history and are weaving forward in the fabric of contemporary life no less, perhaps more vigorously and pervasively than ever before. To discuss land use conflicts and their resolution, then, is, in a sense, to discuss a prevalent divisive force in social living and a main element in the conflict pattern that constitutes social organization and process."

M.M. Kelso, "Resolving Land-Use Conflict," in H. W. Ottoson, Land-Use Policies and Problems in the United States, University of Nebraska Press, Lincoln, 1963, p. 282.

INTRODUCTION

To say that a change in a region's access surface has a particular impact on the way that land is used is to assert a belief in a causal relationship between access improvements and land-use changes. This belief may be justified by a theory which explains the relationship. The theory concerns how different groups of people respond to an access improvement, how the forces they create are mediated in the market place and by city councils, and how society's institutions channel these forces and give them expression in the form of land-use changes. Since some people will profit from the changes and some will lose, the comprehensive land-use theory must include discussion of the "prevalent divisive force in social living and the main elements in the conflict pattern that constitutes social organization and process."

This paper will describe how one Bay Area Rapid Transit (BART) station affected the land-use in its vicinity. Rather than proposing a theory to be tested, we will start by examining the specifics of the situation. The station, and the city planners' response to its potential impact, created expectations which in turn helped generate a land-use conflict. This paper will examine both the community's response to expected impacts and the market's to access improvements. The aim of the paper is to examine some of the dimensions of the city planning problem that is created by introducing a rapid transit station into a stable community.

Rockridge is a community in North Oakland. The residents' expectation of an impact will be shown to have been more important in determining the area's land-use patterns than were any real prospects for change. The Oakland Planning Department's activity was probably a greater factor in determining the form of the problem than the traces of speculative activity which have tended to herald structural changes in the spatial pattern of North American cities. We can examine the political history of the area and the expectations of the residents, and describe the events and reactions which created conflict in the community. The role of planning expertise, the imperatives of professionally prepared plans and the manner in which the presentation of probable consequences affect the perception of the situation can be studied in this one residential area.

The Rockridge BART station was thought to offer a substantial improvement in the access surface. Since patterns of accessibility, land values and land-uses are interrelated and since altered costs of commuting are expected to change people's preference ranking of alternative locations, we may expect to find the market's invisible hand poised for action and set to forge changes in the area's spatial structure. If the market forces affect the city as location theory suggests they do, then we should expect to find indications of imminent land-use changes. By searching for these and combining the findings with observations of political decision-making we have an opportunity to examine Rockridge from a social-historical perspective, to apply econometric arguments, and to analyse the main policy issues.

The writer adopts a historical perspective and an empirical approach and aims to describe a land-use impact and the use of land-use impact statements. The Rockridge area and its political history will be reviewed. The manner in which the Oakland City Council decided on land-use will be discussed. The City Planner's role in affecting the pattern will be revealed. The residents' reactions and expectations will be analysed and their organization and march on City Hall will be described. The outcome will be discussed in the first part of this work.

The mood of the paper will then change. The writer adopts a theoretical stance and recreates the story by using location theory in the context of the Rockridge situation.

The aim of the second part of the paper is to study the BART station's impact on housing prices using econometric methods. The conclusions contradict the expectations attributable to location theory and support the argument of the historical analysis that markets respond to political as well as to economic environments.

A reflective stance guides the third and last part of this paper. The nature of the planning problem is discussed. The problem of bounding planning problems is reviewed. The way planners bound these problems is discussed. The costs and benefits of a development oriented and a conservation strategy are presented and the policy implications of changing the boundaries are revealed. The way changes in the perception of the problem affect use of such straightforward methods as Cost/Benefit analysis will be reviewed. The effect of relying on empirical evidence and theoretical knowledge will be evaluated.

PART ONE: LAND USE PLANNING IN ROCKRIDGE

PART ONE

LAND-USE PLANNING IN ROCKRIDGE

> As I strolled through the streets of this wonderful Oakland, everywhere I could hear the click of the hammer, the buzz of the saw, old buildings being torn down, new ones erected, excavations done by the thousands of big steam shovels, all hurrying with a happy smile of contentment that comes from hard work and achievement.
>
> "Oh," I said, "is this the Oakland I saw twenty years ago?" "Yes," said the Guide.
>
> And again I said: "Who made Oakland?" And a great voice from the Heavens said: "God made Oakland and all that is glorious herein."
>
> (Florence B. Crocker, Who Made Oakland, 1925, pp. 29 & 133)

Introduction:

A review of the historical context of a land-use conflict is useful because it reveals the way different groups of people interacted, offering us insight into their values and perceptions, it shows what each group may expect of the other in the future, and it identifies grievances, supplying a basis for claims for rectification of past wrongs. By reviewing the history of Rockrdige, we shall see how city planners influenced the course of events and how they were instrumental in bringing about the land-use conflict and then in resolving it.

The first chapter describes the physical and demographic characteristics of Rockridge. The second chapter deals with the controversy surrounding the construction of BART and the freeway beside which it was to run, the early conflicts over land-use and then the city planners' first land-use impact statement. This chapter deals with the history of Rockridge from 1960 to 1972. It leaves Rockridge at a time when various citizen groups holding different views as to the value of the BART station's impact sought diverse land-use plans.

The next chapter will describe how the characteristics, expectations and reactions of Rockridge residents differed from those of people living around other station areas. Unlike Chapter Two, this account is based on an analysis of machine readable data developed by Donald Appleyard and Francis Carp in their "Urban Residential Environment Survey". This change in mode of analysis and description is for the purpose of obtaining "behind the scenes" information. The data and therefore the accounts based on them do not constitute part of the public information that was to affect the outcome of the Rockridge planning process.

The last chapter of Part One returns to the situation as reported in newspapers and as I saw it as a participant in one of the citizen groups. It takes up the history from its turning point in 1972 until the formulation of a land-use plan in 1975.

The aim of Part One is to describe the directly observable land-use impacts created by the Rockridge BART station.

CHAPTER 1

INTRODUCTION TO ROCKRIDGE

The Physical Characteristics:

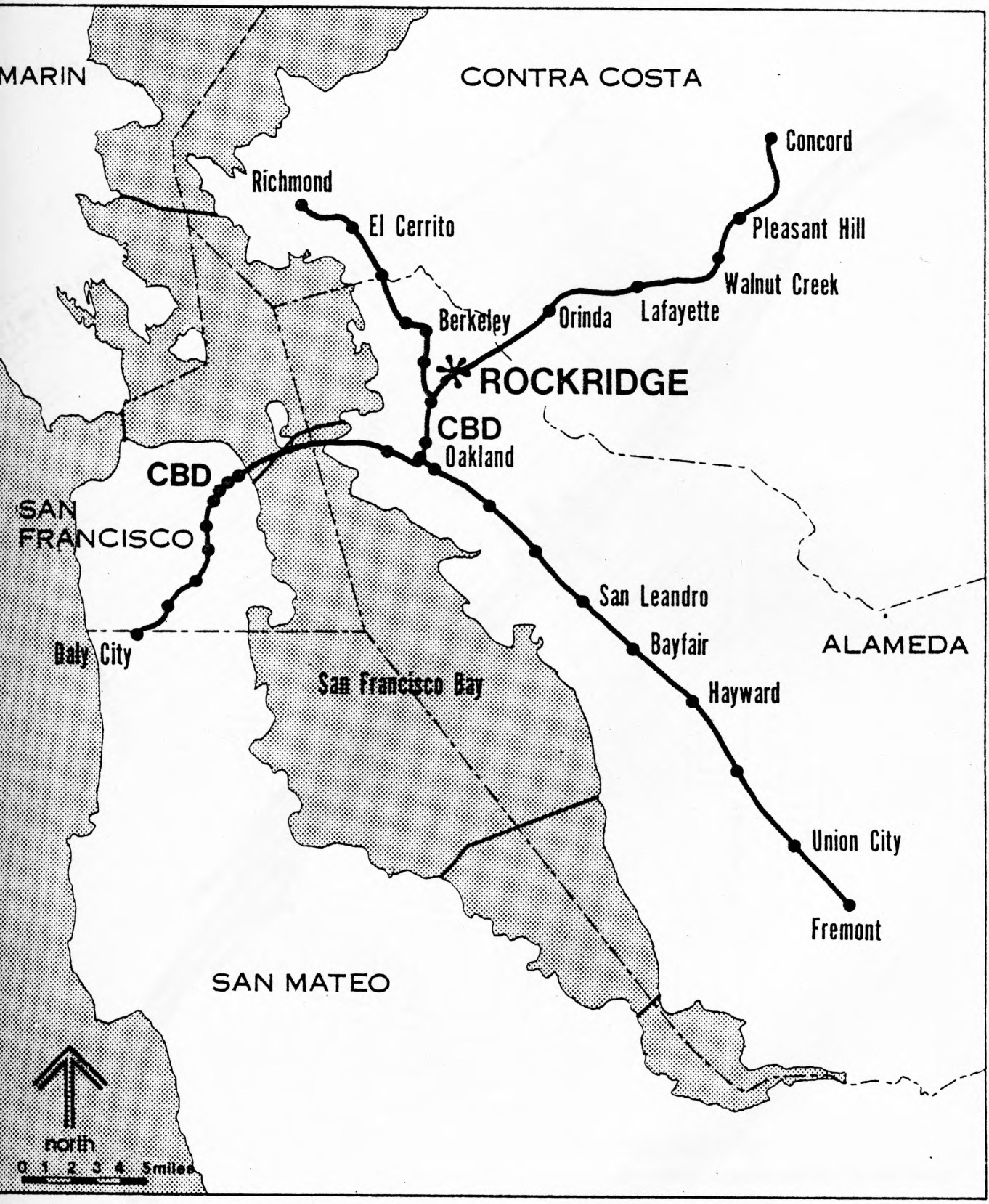
Rockridge is a North Oakland neighbourhood bounded on the north by the Berkeley city limits, on the east by a range of low hills, to the west by a predominantly black middle-income residential area. The south boundary is not marked by abrupt changes in housing or population characteristics. However, residents' attitudes change and tend to be allied with Temescal neighbourhood organisations. Figures 1 and 2 show the location of Rockridge in the San Francisco Bay area, and the extent of the study area. Figure 3 shows the Rockridge station under construction.

At the turn of the century the square mile of land which is now Rockridge belonged to the Peralta Reserve. Oakland's central business district was experiencing a boom and the city was expanding. The relationship between public transport, land-use and rents shaped its development:

> There was a close and often obvious relationship between the development of real estate and the extension of trolley lines. Often developers with interests in trolley lines contracted with outside real estate firms to assist in the marketing of development lands. Then arrangements would be made for the extension of the trolley system to the land being subdivided. Following the successful marketing of land, the net profit would be split between the developers and the subdividing real estate firms.[1]

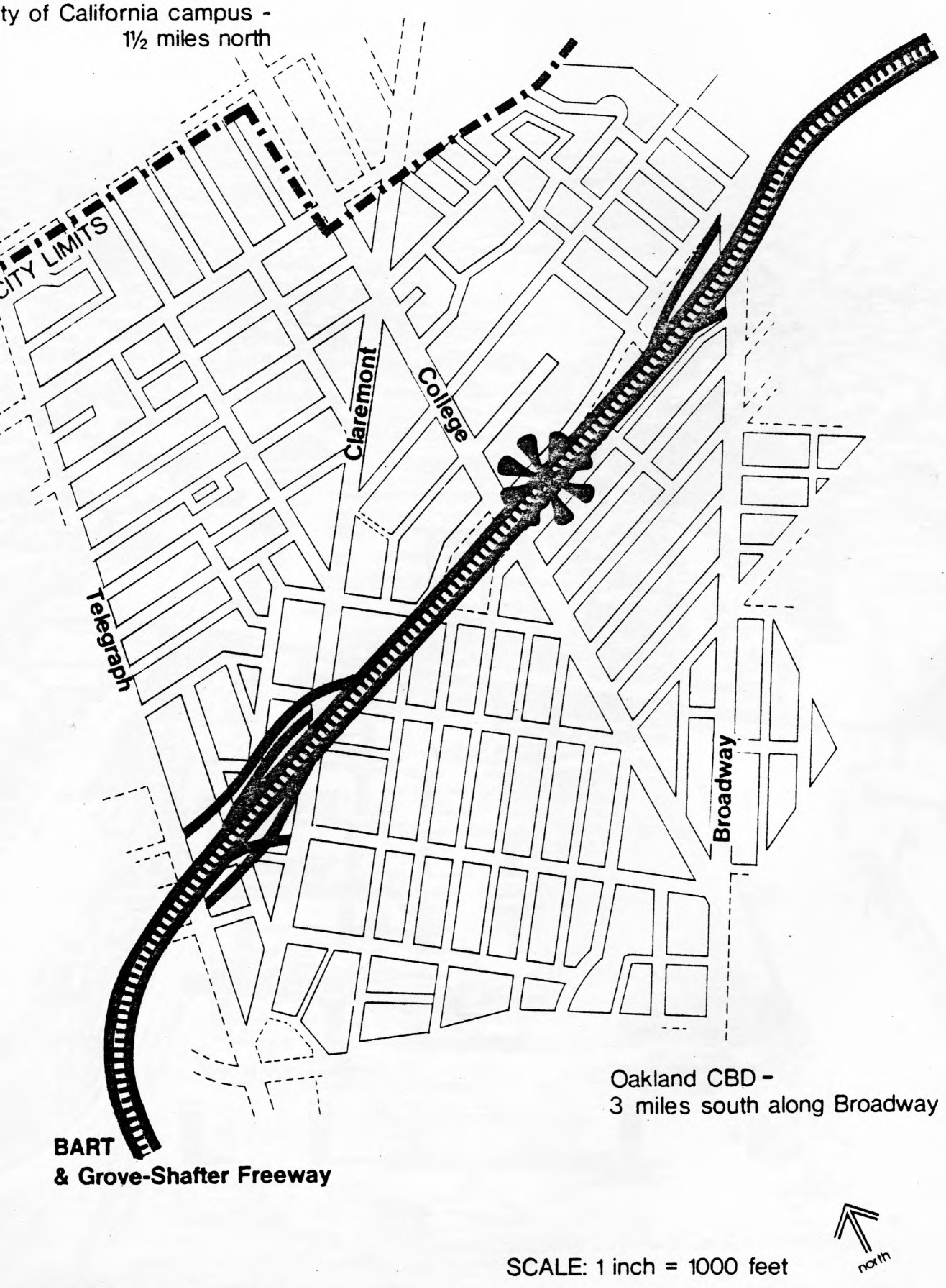
The Peralta Reserve, some four miles to the north of the city's central business district, was made accessible by trolley lines layed along College Avenue, and in 1903 subdivisions started. Lots of approxi-

Figure 1 - The BART System



Map Prepared by the Metropolitan Transportation Commission (MTC).

Figure 2 - The Rockridge Area



ty of California campus -
1½ miles north

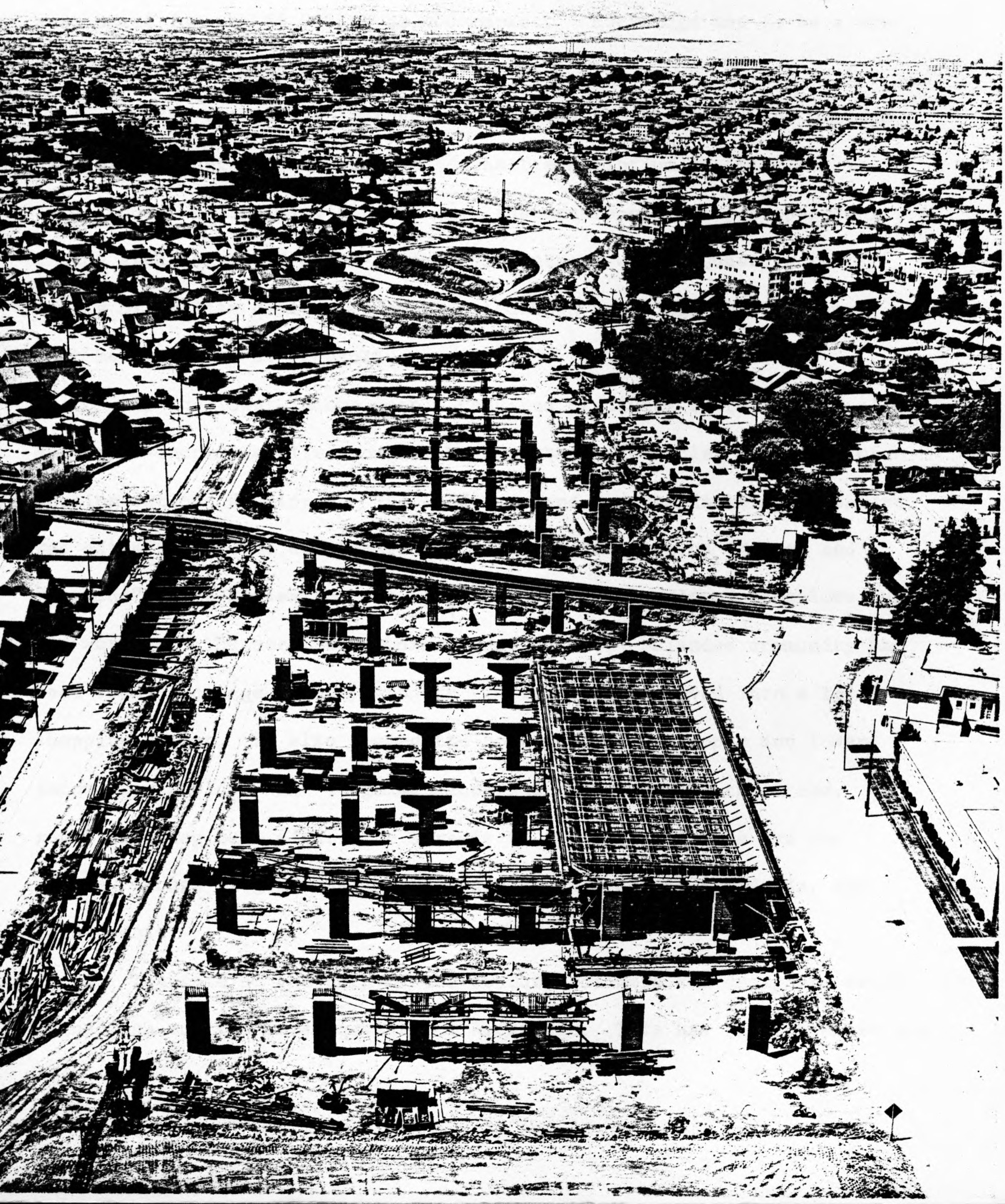
Oakland CBD -
3 miles south along Broadway

BART
& Grove-Shafter Freeway

SCALE: 1 inch = 1000 feet

(MTC)

re 3-Rockridge 1960's (Photo courtesy of BART)



mately 60 by 100 feet were staked out and city blocks of twenty to thirty lots were layed out perpendicular to College Avenue. The area grew and developed outward from this axis. By 1920, more than half of the present buildings in Rockridge were completed. In 1913, when more than 80 percent of all new houses were built to sell for under $2,500, those in Rockridge were built for the $4,000 to $8,000 market.[2] Rockridge was to be a predominantly upper middle-income suburb.

While the access improvement extended the built area of Oakland and helped upper-income people find their equilibrium in locations in large houses at the city's periphery, the development of job opportunities in the area attracted lower-income residents as well. Quarry workers, mostly of Italian descent, populated southern Rockridge and the area that became known as Temescal.

As the lower-income people required proximity to their work place, and upper-income families sought the suburban life style, a variety of housing options developed. The latent demand for the Rockridge location was satisfied by the developers who built large shingled "Tudor" and "Normand" style houses for the rich and "Spanish-American" bungalows for the workers. The seed for a harmonious, socially balanced community had been sown. College Avenue, with its trolley line, evolved into a local shopping street. It also formed the boundary between upper and lower income households. The large mansion-like houses are on the treed, gently sloping east side. The streets to the west are bare and the houses, though of good quality by today's construction standards, are more modest.

The care of the turn-of-the-century builders and designers established the environmental quality of Rockridge. This has been adjusted but not markedly changed by housing construction since 1920. Several duplexes, quadruplexes and small apartment buildings have been built since 1920, and are either scattered through west Rockridge or in a row along Broadway.

The characteristics of Rockridge can be illustrated by statistics taken from the 1970 U.S. Census of Housing. Table 1 describes the housing types. More than half the units are detached houses and more than 80 percent of the residential structures are single-family. Less than one percent of the structures in Rockridge are apartment buildings. Table 2 shows the age distribution of the dwelling units. More than 90 percent of the units in Rockridge were built before 1960. Data drawn from the Alameda County Assessor's files show that only 14 percent of the single-family houses were built after 1930 and that only 15 single-family units were built after 1960. The character of Rockridge is defined by single-family houses, especially those built before 1930. The Assessor's files show that there are only 7 lots in Rockridge which are "under used" when judged according to neighbourhood standards. These are the only lots which could absorb new structures without demolition. Intensification of land-use in Rockridge would therefore involve the replacement of existing buildings, and a fundamental change in the character of the area.

TABLE 1

DISTRIBUTION OF HOUSING TYPES IN ROCKRIDGE

(1970 U.S. Census of Housing)

	Units		Structures*	
	Number	%	Number	%
Single Family	2,745	51.4	2,745	81.2
2 Units	766	14.3	383	11.3
3 or 4 Units	761	14.2	217	6.4
5 to 50 Units	1,004	18.8	33	1.0
50 Units	67	1.3	1	0.0
Total	5,343	100.0	3,379	99.9

*Assumes: 3.75 units in the triplex and quadruplex category; 30 units in the average small apartment building.

TABLE 2

AGE DISTRIBUTION OF DWELLING UNITS IN ROCKRIDGE

	Year Structure Built						
	39	40-49	50-59	60-64	65-68	69-70	Total
Number	4,179	381	383	277	92	31	5,343
%	78.2	7.1	7.2	5.2	1.7	.6	100
Cumulative %	78.2	85.3	92.5	97.7	99.4	100	

Note: This table presents the age distribution of dwelling units not of buildings.

The Demographic Characteristics:

One of the attractive attributes of Rockridge, as claimed by many residents, is its diversity. It is a place where families with different incomes and life styles can find affordable housing. The 1970 census statistics bear this out. Table 3 shows the distribution of expected market value of houses and the contract rents.

TABLE 3

EXPECTED SALES VALUE OF HOUSES AND CONTRACT RENTS

	Expected Market Value of House						
Range	$ < 10,000	10-19	20-24	25-34	35-49	50+	Total
Number	13	650	625	458	125	23	1,894
Percent	.7	34.3	33.0	24.2	6.6	1.2	100

	Monthly Contract Rent						
Range	$ <80	80-99	100-149	150-199	200-249	250+	Total
Number	432	550	1,323	386	78	41	2,850
Percent	15.2	20.7	46.4	13.5	2.7	1.4	99.9

Assuming that a family can afford a house whose price is twice their annual earnings, or a rental unit for which they pay 25 percent of their income, then the potential income distribution is given in Table 4.

The median family income in Rockridge is 9,028 in the western half and 12,750 to the east of College Avenue excluding the area above Broadway. More than one-third of the Rockridge employed residents were listed in the census as being in the professional or technical classification. In 1960 the median family income in Rockridge was 10 percent higher than in Oakland. In 1970 it was only 8 percent higher.[3]

TABLE 4

POTENTIAL AND ACTUAL INCOME DISTRIBUTION
(in thousand dollars)

Range	0-5	5-10	10-15	15+
Owner	13	650	654	206
Renter	1,022	1,709	88	21
Total	1,035	2,359	943	398
Potential %	21.6	49.3	19.4	9.5
Actual Income Distribuion %	17.6	29.5	29.7	23.1

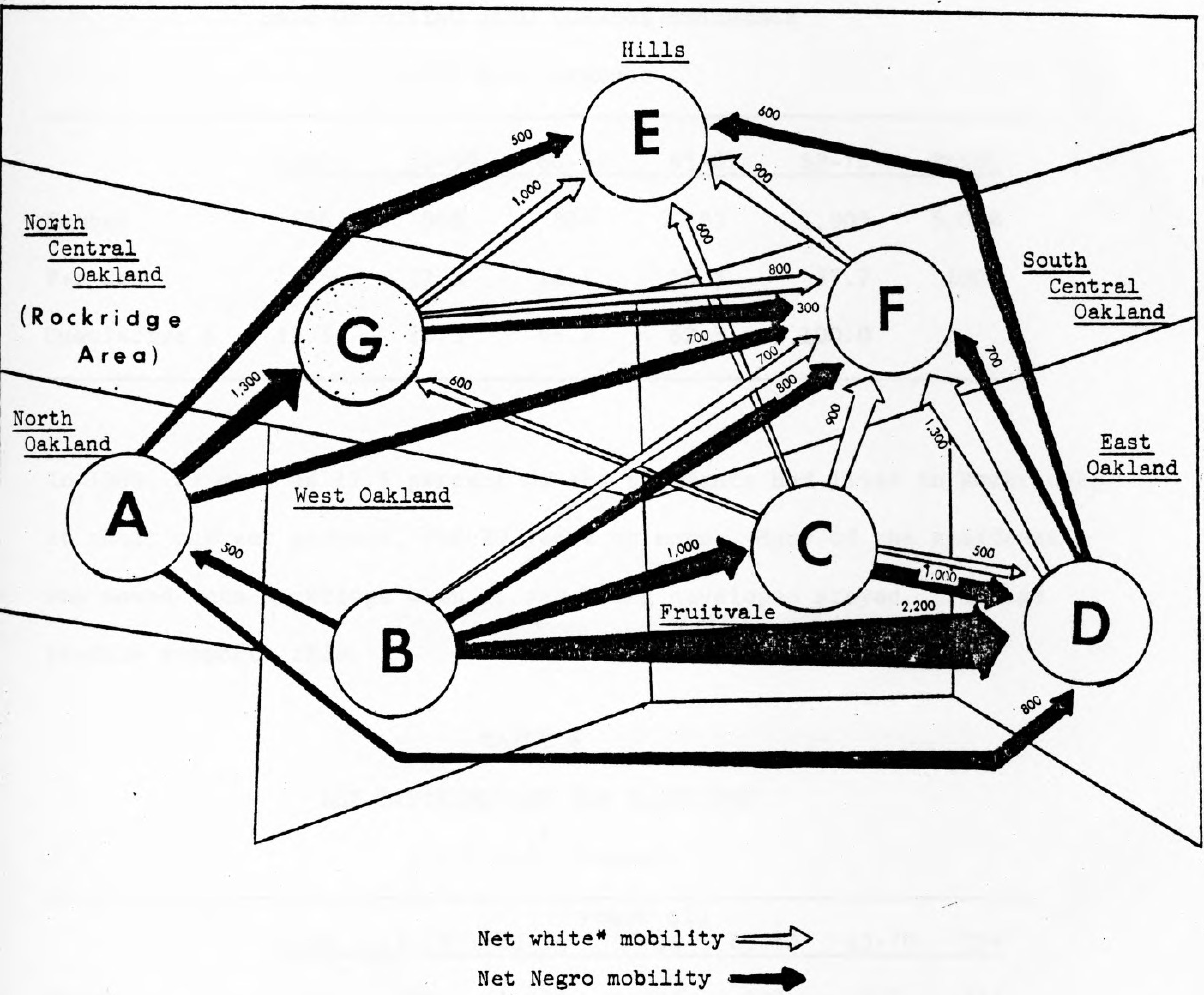
Source: U.S. Census of Housing

In 1960 Rockridge was predominantly a white middle class neighbourhood. By 1970, its residents could boast of being a racially integrated area with 16 percent black residents. (The City of Oakland was close to 40 percent black.) The statistic by itself is somewhat misleading. In the attractive area to the east of College Avenue less than 2 percent of the population was black. In the north western sector, from Claremont Avenue outward, more than 50 percent of the 1,457 people were black. The boundaries of the predominantly black neighbourhood to the west of Rockridge have been shifting eastward. Figure 4 shows mobility of black and white residents between 1961 and 1966. The whites moved out of north central Oakland into the hills and into south central Oakland. The boundary of black community in north Oakland was shifting eastward into Rockridge. The Oakland City Planning Department expressed some concern over this change. The houses on the west side of College Avenue were believed to be deteriorating. If the BART station was to have its desired land-use impact, the deterioration had to stop and the area would have to be upgraded.

The age distribution of Rockridge shows it to be a relatively stable neighbourhood. The 1970 census gives data on when residents moved

Figure 4

NET WHITE* AND NEGRO INTRA-CITY MOBILITY BETWEEN AREAS
LAST MOVES WITHIN OAKLAND
BETWEEN 1961 AND 1966



Source: Oakland in Transition, Survey Research Center, University of California, Berkeley, 1969, p. 65.

into their dwelling units.

TABLE 5

DATE OF MOVING INTO CURRENT RESIDENCE

(1970 U.S. Census)

	1949-	50-59	60-64	65-67	68-70	Total
Number	886	648	836	783	1,905	5,058
Per Cent	17.5	12.8	16.5	15.5	37.7	100
Cumulative %	17.5	30.3	46.8	62.3	100.0	

In 1969, as many as 17.5 percent of the residents had lived in Rockridge, at their current address, for 20 years or more. Many of the residents who moved into Rockridge when it was being developed stayed. The age profile supports this.

TABLE 6

AGE DISTRIBUTION FOR ROCKRIDGE

(1970 U.S. Census)

	0-14	15-19	20-34	years old 35-59	60-64	65-70	70+
Male	1,074	326	1,879	1,325	277	407	287
Female	1,072	417	1,783	1,591	393	603	598
Total	2,146	743	3,662	2,916	670	1,010	885
Percent	17.8	6.2	30.4	24.2	5.6	8.4	7.4
Cumulative %	17.8	24.0	54.4	78.6	84.2	92.6	100

Sixteen percent of the population, compared to 10 percent for the City of

Oakland, are over 65 years of age. Unfortunately, the census does not give a breakdown by tenure status and the statistics only suggest the fact that many of the people who bought houses in Rockridge in the 1920's and 30's, when they were settling down with their families, stayed. Ths inference was supported in interviews with many Rockridge residents. The implication of this statistic is that soon a substantial proportion of the houses in Rockridge will change owners as a new generation takes over. There may soon be a buyers' market in Rockridge. The area appears to be ready for change.

CHAPTER 2

THE HISTORICAL SETTING OF THE LAND-USE CONFLICT

The Introduction of BART and the Grove-Shafter Freeway:

During World War II the Bay Area experienced a large population growth. War production created new jobs and new demands on transportation systems. In 1944, the armament plants were not meeting production schedules and a joint army-navy committee pointed to the transportation system: workers were having too much difficulty with their daily comutes. In 1946, the committee advocated a rapid transit solution to the problem. Soon San Francisco citizen groups, comprising of the executives of large corporations, took up the cry. Without improved access, the San Francisco central business district would not maintain its dominance over the region.

In 1947, the California Department of Highways proposed the Grove-Shafter freeway. It would tunnel through the Oakland Hills and connect the areas to the east with the Oakland and San Francisco business districts. The tunnel was to be just east of Rockridge. In 1949, the San Francisco Metropolitan Rapid Transit District Act made BART's inception possible. The problem it was to resolve was congestion on the freeways.[1] The BART line would follow the Grove-Shafter freeway and proceed through the proposed tunnel just east of Rockridge. The two plans would soon be seen as one. The freeway plans, being more concrete, were the first to spearhead the residents' opposition.

News of the planned freeway route reached residents of North Oakland when a city engineer passed on "second-hand information". Immediately many residents became concerned, citizen groups formed and their representatives offered to help City and State agencies locate the route for the freeway. Their offer was politely rejected:

> ...in effect they told the people that they would have to wait to voice their views until the engineers had decided on which route was to be proposed.[2]

The North Oakland residents were not deterred and continued to press for information regarding the highway. The city responded with 56 public statements in one year and none of them fixed the route. "Rumor routes" emerged and alarm continued to spread. Anger and frustration reigned. The plan was disclosed on November 17, 1956 and,

> After the engineers had delivered what amounted to a sales pitch for the proposed route, representatives of the Chamber of Commerce and various downtown groups read prepared statements and presented resolutions favouring the state's plan. It was apparent to even the dullest person present that the state had consulted with several groups - while they were carefully keeping the people in the area affected completely in the dark.[3]

The residents' reactions were summarized by the next day's headline in the "Oakland Telegraph":

"ANGRY CITIZENS PROBE SECESSION POSSIBILITY"

The Oakland City Council heeded the residents' requests for a reconsideration of the route choice. They permitted the residents entry into the planning process and requested the State Division of Highways to develop alternative routes for consideration by the citizen groups. While the initial route took over a year to plan, the thirteen alternatives took a few months. The citizen groups who would be affected by the alternatives argued amongst themselves and, after due consideration, the conflict was resolved by the engineers' decision that their initial recommendation was the best one.

In August 1960, a week after the District Court denied an appeal by the "Oakland Home Defenders" and stopped legal actions against the freeway, bids for the tunnel construction were let. Residents and local merchants remained enraged at the "ridiculous freeway" and at the planned "condemnation, without representation". The freeway remained an issue throughout the early sixties and through the early periods of its construction. A final appeal was made on April 16, 1965 when Fred E. Reed announced that, "The whole plan of the Grove-Shafter and BART will be stopped in its tracks before the tracks are laid, if I'm elected Mayor of Oakland." He lost.

While the Grove-Shafter freeway route was being planned, it became apparent that Rockridge, the single family neighbourhood, was to be crossed twice; once by the freeway and once by BART, the means to eliminate freeway congestion. The Oakland City Planners, recognizing that the two systems would be concurrently constructed, advocated a plan that would link them and place BART in the median strip of the highway. This solution was said to have a less disruptive effect on the city's property tax base. The joint project was accepted by Council and on December 6, 1963, the "Claremont Press" announced that trains would run in early 1968 and that the station would be above College Avenue.

More effective than the Rockridge citizen groups were those in Chabot Canyon, an affluent neighbourhood to the east of Rockridge, on the foothills side. BART was to cross their residential area along a trestle. The Chabot Canyon Association did not attempt to halt progress but proposed alternative plans based on engineering expertise. These plans were accepted in principle after the possibility of a tax revolt became apparent. BART and the freeway were re-routed along the side of the mountain and the neighbourhood was spared. The December 22, 1965 "Claremont Press" suggests that:

> One of the reasons this group has been successful... is that it has met the state and transit officials with feasible plans of their own. They have thought of what was best for the state and for the area, as well as for the general good of the public, when they made any recommendations. The Chabot Canyon area is fortunate in its resources, it has, as residents, many competent engineers, architects and other professional people to draw on.[4]

Examples of the Oakland City Council's Land-Use Policies in the Sixties:

In Rockridge, at least three land-use conflicts were resolved during the mid-sixties. A brief review of these will show how land-use policy was made in Oakland. It will illustrate what kind of response Rockridge residents could expect of the City Council and what trust they could place in the Council's consideration of "social welfare".

A local entrepreneur sought a zoning variance that would permit him to open a pool hall on College Avenue. Residents and merchants joined their protest. Spokesmen for the College Avenue Merchants' Association argued that such an enterprise would "severely damage the present fine business and residential character of this neighbourhood."[5] After much publicity in the "Claremont Press", and after some 400 signatures petitioning against the variance were presented to City Council, the pool hall sponsors declined to appeal for the zoning change. The community's success is apparently attributable to the fact that all groups in Rockridge opposed the pool hall, which would offer no substantial benefit to the rest of the city.

Shortly after this issue was resolved, news of a proposed private school on Chabot Avenue reached the residents. Again, "North Oaklanders Battle Plan for School Here: Residents Object to Breaking of Present Zoning Restrictions". (Headline in the February 21, 1963, "Claremont Press") The residents on Chabot Avenue expressed the fear that "by allowing this school to break the present zoning, a 'wedge' would be created which would open the way for the construction of apartments in this area - and eventually the establishment of business."[6] A confused battle ensued. The City Council first decided that the school could be built on half the proposed site. Then homeowners won the fight and the next week local papers ran headlines announcing "Council Nixes 3-R School." After all this, the school was built according to a compromise plan. This struggle shows that some residents were already concerned with potential land-use changes. They were concerned about allowing a precedent to be established. In 1963 both residents and merchants shared a sense of the kind of activity they wanted along College Avenue. Residents to the east of College liked their neighbourhood and they felt threatened by any changes that might eventually disrupt it. They opposed, in principle, any change that would open the door to further development.

The third land-use conflict concerned the commercial profile of the neighbourhood. Up to this point in time, College Avenue had consisted of a continuous strip of rather small community-oriented shops. In the early sixties, "Safeway" placed three stores in Rockridge. One was on College Avenue to the north of the proposed BART station, one was to the south on Broadway and one to the east on Claremont Avenue. All three stores were approximately one quarter mile away from the station site.

In January 1966, after freeway construction had started, attorneys for "Lucky" stores requested a zoning change for their 67,000 square feet of assembled land abutting the northwest corner of the BART station site. They wanted to build a supermarket in the area adjoining the station. The College Avenue Merchants' Association unanimously backed the proposal. The store, they believed, would help revitalize College Avenue; a commercial development this close to the station was considered ideal by the merchants. Residents living in the area objected. The City Planning Department opposed granting the zoning variance because it believed that a site so close to BART should be reserved for high density apartments. These would make best use of the location. The Planning Commission concurred and did not grant the commercial chain the exemption. Lucky's attorneys argued that their store would not bring more cars to the congested College Avenue but it would simply service the area. The zoning change would permit the establishment of a "modern commercial facility" in Rockridge and this change was in accordance with the guidelines of Oakland's general plan. Lucky's architect assured his audience that "the proposed market had been designed so as to have a residential character" (sic).[7]

In March 1966, the City Council reversed the Planning Commission's decision by the required five vote majority after a series of apparently irregular maneouvers by the City Council. The Rockridge residents suspected that they did not have a fair hearing. The residents objected to the vote on the grounds that one council member owned stock in Lucky's and that the Mayor, who was in the meat packing business, had dealings with the chain. The strongest proponent for Lucky's was Felix Chialvo, the elected "at large" representative for Rockridge.

The supermarket was built despite the objections of the residents, of the Oakland City Planning Department and of the Oakland Planning Commission. In this case the residents and the merchants were at odds; the Council resolved the intra-community conflict by supporting the business community's viewpoint.

In 1966 the pool hall people made another bid for a variance but withdrew again as public pressure rose. Of the three controversial proposed developments, only the pool hall was stopped. It was the only project opposed unanimously by merchants and residents. The merchants ignored the school zoning conflict but stood, with their representative on Council, opposed to residents, the City Planning Department and the Planning Commission, in favour of Lucky's Store. The merchants were consistently the most organized neighbourhood group: they had purposes and functions other than responding to crises. The residents emerged only when a change was imminent. The resident groups were fragmented and opposition to specific issues came only from those about to be directly affected.

The Projected BART Land-Use Impact:

Whether the inceptors of BART had as a goal the reduction of congestion on the freeways or the enforcement of the San Francisco CBD's regional dominance, is still an unanswered question. Others, however, did advocate rapid transit on the basis of its land-use impact. In 1950, the Oakland City Planning Department in its report "The Rapid Transit Problem in the East Bay" recognize this:

> In addition to providing economical, convenient transportation and clearing our streets and highways of paralyzing traffic congestion, an improved transit system can benefit the East Bay in other respects. Property values generally will be stabilized and probably will increase in many instances ... Today, city planners recommend that the location of transit lines be used as an instrument for achieving the objectives of master plans. If the best use is to be made of land still available for development in the East Bay, transit extensions should be based on studies of future population growth and of the areas best suited for residential, industrial and commercial expansion.[8]

Although aware of the strong relationship between land-use and transit planning, and despite consultants' suggestions to BART that the system should be planned in the context of an overall regional plan, Bay Area planners did not explicitly introduce potential land-use consequences of BART in the early stages of its planning. Soon after the BART routes were announced, many prophecies extolled the virtues of the system's expected side effects. The Oakland Telegraph in January of 1961 reports city engineer Kenneth Hoover's prediction that BART will "dramatically" raise property values in Rockridge.

> Many communities have over-emphasized what I shall term the 'negative' aspects of rapid transit facilities. In my opinion they have failed to appreciate fully the 'positive' beneficial effects that these facilities will have on their communities.
>
> I refer not only to the tremendous benefits rapid transit will bring directly through increased accessibility, but also to the opportunities it will present to many communities for redevelopment and renewal projects in conjunction with the construction of transit facilities.[9]

Rapid transit systems built elsewhere were thought to have increased property values and induced large-scale changes in the urban fabric. Certainly, in the pre-automobile era, the improved access brought about by tram lines opened up new land for residential use. Rockridge was made possible by the extension of tram lines along College Avenue: improved access provides development opportunities. To illustrate the potential BART impact on Rockridge, Kenneth Hoover describes a hypothetical project, designed by the Berkeley City Planning Office, which shows a net increase of $420,000 in assessed property values within a four block radius of the Berkeley station. This is a significant event, for it shows us how eager the planners were to make development happen. Without a client in mind, the planners were drawing pictures.

The message was slow to get across to the public and Temescal area merchants, concerned over property losses due to BART and freeway demolition, forced a meeting with city officials. The Claremont Press reported on the meeting with the October 9, 1964 headline: "Dream of Future - Planners See Temescal as Oakland's North Beach." Thompson, the Oakland City Manager, felt that the city could develop a plan in cooperation with the merchants that would turn the Telegraph Avenue shopping strip into a "real Italian center" which would improve values and restore confidence in the area: "Temescal could be Oakland's Gateway to the University of California."

The following April, Felix Chialvo urged the College Avenue Merchants' Association to "form a delegation to meet with the city officials to tell the city what developments were desired in this area", and to "do it immediately." It appears that he assumed that the merchants would want buildings. Off-street parking, aid to families displaced by the freeway, fencing in a lot where a building had been demolished, and the repainting of traffic markers on College Avenue were the issues raised.

From this point in time, Rockridge residents and merchants were promised a future in which large-scale changes would bring a new skyline to North Oakland. The merchants, the people whose economic well-being was tied to the future of the area, were urged to present plans. Marc Herbert, assistant director of the Oakland City Planning Department, called for the establishment of an "Improvement Association" at a meeting sponsored by the Rockridge Women's Club. BART, by bringing the Oakland CBD to within a six-minute ride and San Francisco to within 14 minutes, would increase the demand for business and commercial development. Herbert acknowledged that "presently the Rockridge area is not zoned to accommodate this high density of residential development." "However," he continued, "this could be corrected as requests for zoning changes come in and the General Plan is revised."[10] Implied in this statement is the restructuring of North Oakland by means of spot rezoning. Assumed also is that the residents would want development, and that they would petition the Planning Department for the zoning changes that would allow it.

Herbert felt the need to warn Rockridge residents that the "potential boom" will bring with it problems such as more people, traffic, dirt and "a tendency to blight the area somewhat". However, these "could be offset by the formulation of a broad improvements association composed of property-owners as well as businessmen." The association "could combat any tendency toward blight with projects such as a street tree planting drive and a clean-up, fix-up campaign."

The following week in October 1965, Marc Herbert addressed the College Avenue Merchants' Association and let it be known that big apartment buildings would come to Rockridge.

> ... action to clear the way for the construction of high rise apartments in the College Avenue area could come in three years or so.
>
> We are just now starting a study of Oakland's general plan, and most certainly will be looking into the Rockridge District ...
>
> We are still guessing about many things, but there are some things that are facts. And, one of these facts is that big things are about to happen in Rockridge soon.
>
> A new business climate is going to develop. Hundreds of new people will be coming into the area each day. And people equals business. A new demand for goods and services will be created on College Avenue.[11]
> (emphasis mine)

This pro-development chorus sounded throughout the sixties. The expected development potential increased with time and its benefit was never questioned. Merchants became optimistic. Joseph Brignole, president of the once worried Temescal Merchants' Association calls for unity among merchants in North Oakland and looks forward to the time when "new large business complexes and highrise apartments are constructed as a result of North Oakland becoming the 'natural hub of transportation'."[12] James Brown, community relations officer for BART, also sees a "bright future for Rockridge": "an increase in property values and a boost in business."[13] The major impact, he predicts, will occur within four blocks of the BART station. Normand Lind, the director of the Oakland Planning Department, saw the beneficial side of the BART impact but warned residents that "the future of the area depends not on public action but on the desire of the businessmen here to strengthen their own community."[14]

The Oakland City Planning Department prepared a BART impact report in July 1969. They noted the New York, Cleveland and Toronto experiences:

> The New York subway and elevated rapid transit system was built largely between 1900 and 1920. The impact of the transit on real estate was evident both in increased land values and building intensity within walking distance of stations (increases of 5-15 times previous value), and property appreciation throughout New York City.[15]

Their source was a study by Alan M. Voorhees and Robert Gladstone Associates.[16] It is true that property values have increased in New York since 1900. It is possible that without the transit systems the increases may not have been as great.

> In Cleveland, Ohio, the rapid transit system was built in two stages. The Shaker Heights line, completed in 1920, created a property value differential of nearly $2,000 in favour of the homes built near the line over properties outside walking distance from the station. The new 15 mile system built in 1955 has generated a significant concentration of apartments and commercial buildings near its 16 stations.[17]

This was another attractive observation to lend support to the belief that great changes would occur in Oakland. The Toronto case was seen, however, as the most applicable.

> Toronto's boom in building near its rapid transit stations, ... has been documented. Near the outer terminal station of Eglinton, initial development impact occurred mostly within a five mile walking distance to the station. By 1962 500,000 square feet of commercial development had grown up close to the station site. Multistorey apartment buildings tended to be developed several blocks beyond because of zoning and land availability factors, and was noticeably less concentrated than commercial development.[18]

Conventional wisdom, location theory and the observed relationships between access improvements and land-use changes prompted city planners to forecast large-scale changes for Rockridge. Their speeches led merchants to believe in a beneficial land-use impact. The changes were desired and some expected a boom. Rockridge residents were asked to partake in the event and petition for zoning changes. They were asked to help keep the area attractive by starting tree planting and clean-up, fix-up campaigns.

The Perceived Problem:

The Oakland City Planning Department's stance on Rockridge is best viewed in the context of their goals for Oakland. During the forties, the population of Oakland grew by almost 30 percent. During the fifties, it declined in absolute magnitude. The HUD-sponsored 701 planning study revealed a reversal of the downward trend and prepared new forecasts. Table 1 presents the past trends and forecasts as presented to the Oakland City Planning Department by University of California's Survey Research Center.

TABLE 1

POPULATION TRENDS AND FORECAST FOR THE CITY OF OAKLAND
(in thousands)

	Total	White	Non-White	% Non-White
1940	302	288	14	4.7
1950	385	329	66	14.5
1960	368	271	57	26.4
1966	374	243	130	34.5
1970 (f)	383	228	155	40.5
1975 (f)	407	210	157	48.4

(f) indicates forecasted population.

Source: Oakland City Planning Department, Options for Oakland, 1969.

Middle-income whites were leaving Oakland and their place was being taken by lower-income black households, especially in the western section of Rockridge. In their 1969 Options for Oakland report, the city planners stress the goal of ". . . achieving a basic character as a middle income community." This goal should be pursued by "providing in sufficient quantities, the housing, educational, service, and environmental qualities which a larger population with generally higher incomes will seek." It was considered that improved housing and services would help Oakland retain its middle-income residents and attract new ones. The planners recommended that "the city should make a special effort to convince communities outside Oakland to make housing subsidies available so that low-income families may, if they choose, live closer to jobs. . . ."

During the fifties and early sixties, a change in the composition of the housing stock was observed. The amount and proportion of single-family houses was decreasing while that of multi-family units was on the rise. This trend was projected.

The City of Oakland, the planners felt, was "in the main, shabby or dull, and ... lacks clear form." They saw it as a:

> Sprawling, low-density city with centers that failed to look like centers and diffuse neighbourhoods without strong physical identity.
>
> But new transportation facilities, especially the Bay Area Rapid Transit system and the freeway (would result in) restructuring and improving this physical environment.[19]

The trend in Oakland was towards an increasing proportion of multi-family units; BART created the opportunity to attract middle-income residents to the city and to change the undifferentiated face of the city. The planners recommended that:

> High-density residential development should be channeled into locations offering accessibility and amenity ... Important high density 'spines' should extend along the Grove-Shafter Freeway/BART/Telegraph Avenue corridor.[20]

The planners sought to make Oakland "more efficient, more liveable, more beautiful, and a more dramatic urban environment." At the same time the Planning Department expressed the need for an increase in citizen involvement in neighbourhood planning. They recognize that "much lip service has been paid to citizen participation," and that the city needs to develop new "techniques for establishing effective communication with its citizens." They also recognize "that the _process_ of neighbourhood planning through citizens involvement is more important than the neighbourhood _plan_ itself." And,

> Since decisions are almost constantly needed concerning programs, priorities, and allocation of resources, solid neighbourhood/city contacts with some agreement as to basic neighbourhood policy could help the overall _decision-making process without conflict or bitterness_.[21] (emphasis mine)

While maintaining the goal of restructuring the city and of involving citizens, the Oakland City Planning Department conducted a series of "round table" discussions with experts in the development field to determine strategies for planning land-use in BART station areas. Forecasts were based on the New York, Cleveland and Toronto experiences. In their 1969 report, "BART Impact", they mention that no changes were yet evident in Oakland. This observation, however, did not trouble them for a theory could be found to explain it.

> This evidence of hesitation in some segments of the BART line is not unexpected. Historically even in New York and Toronto, investor response has largely awaited completion and commencement of operation of the transit system. In California's auto-oriented style of living, caution may be even more understandable.[22]

In a symposium on BART, one expert warned the optimists by saying that there are transit stations in American cities which have not brought development even after forty years. This observation was not heeded. As Benedetto Croce stated, a fact which is repugnant could not be a historical fact.

The city planners, architects, developers, realtors and bankers realized that the amount of investment that would flow into each station area would depend on the attributes of the neighbourhood, and they set for themselves the task of exploring "the conditions which might become the basis for turning rapid transit station functions into a catalyst for community enhancement."[23] The experts recommended that means be found to handle the expected increase in vehicular and pedestrian traffic around the stations, that public assistance to developers for land assembly be considered, and that the special needs of local residents not be ignored. Furthermore, it was suggested that environmental conditions not be allowed to deteriorate near the station and thereby discourage private investors.

In other words, Rockridge had to be guarded and its pleasant ambience improved upon. This had to be done so that developers would be willing to come and enhance the community with highrise structures.

Rockridge was described by the planners as a particularly attractive situation. It was the only "non-poverty" residential area in Oakland with a BART station. The attractive environment of Rockridge would encourage investors and make it a prime location for development.

> During the Planning Department's round table discussions on BART, some participants repeatedly emphasized the natural advantages of the Rockridge station area for high-rise apartment development. Of all the BART stations outside the Oakland Central District, this area was described as the one most attractive to investors in residential building. Emergence of a high-density urban sub-center related to the station would be a dramatic alteration of the area's prevailing low-density character. Such an alteration appears necessary and desirable to capitalize upon the high transportation capacity of the BART system, to take advantage of the rejuvenating investment interest resulting from it. However, the implications of this kind of density changes should be traced to avoid destruction of the area's basic residential appeal.[24]

It was recommended that an initial cluster of high-density apartments be located in the north-east quadrant of the station area. Lot sizes here are large, averaging 7,500 square feet compared to the 4,000 square foot average elsewhere. This would facilitate assembly. The area had the lowest density zoning in Rockridge and this would, of course, be changed to accommodate the highest residential use density permitted outside the downtown area. Houses on the three city blocks are reported in the 1970 U.S. Census of Housing to have an average value ranging from $33,500 to $43,100. The initial impact would not be in a stagnant and unproductive area but in one of the best parts of town.

Although the future looked bright, one potential undesirable side-effect of the BART related land-use impact was perceived. Some developers, in their urge to respond to the access improvement, might attempt to preempt others by constructing medium density housing. Land resources would thus be wasted with two or three storey structures and the full exploitation of the BART induced potential could be postponed for decades. Public policy, the report suggests, could overcome this problem.

> Intensification of land-use should occur in planned stages; rather sharp contrasts in allowable density could be justified, ... to encourage development of the most suitable high density site first, while single-family areas would be preserved until a distinct market becomes evident for truly high density development. This could establish a system so that transition zoning would not create a belt of medium density apartments just beyond the initial high-density district, thus freezing the holding capacity in the transition zone for the next 20 to 30 years.[25]

The competitive market, aided perhaps by a public land assembly program and regulations to screen out medium density builders, was to bring high-rise projects to Rockridge. Up-zoning would come in stages and single-family areas would be preserved until such a time that more demand for high density apartments emerged. Sharp contrasts in land-use were justified by the long-run benefits.

The planners saw Rockridge as an investment opportunity. The external costs of redevelopment would be borne by the present residents. Their "special needs" were not considered by the architects, planners, bankers, realtors and developers who participated in the "round table" planning sessions.

The First Reactions:

In 1970, four years before BART started service, architect Bernie Leung requested a zoning variance that would accommodate a seven-floor slab apartment building on his own and a neighbour's lot. The 83-unit building would be located in the area recommended by the "round table" discussants. A group calling themselves the "Rockridge Neighbourhood Committee" formed to petition the city for changes that would allow for the kind of development that had been forecast. They supported Leung's proposal. On January 11, 1971, the Planning Commission heard the request in front of a record number of residents. Some four to five hundred people had showed up in protest and, according to the Claremont Press, they "clearly voiced the community's wishes for a planning study." The decision to re-zone was suspended and Bernie Leung lost interest and later moved out of town.

Concerned residents began working with the pro-development Rockridge Neighbourhood Committee to achieve the goal of a comprehensive land-use plan. Above all these residents did not want spot re-zoning and ad-hoc development. If BART was to have an impact it should be planned and its social and economic consequences should be known in advance. The side- and after-effects should be identified and considered in the final decision. This was the residents' aim. Newcomers to the Rockridge Neighbourhood Committee soon left the organization when they found out that their goal of a planned impact was not in accord with the aims of the proponents for up-zoning. The Rockridge Community Planning Council (RCPC) formed and set out to obtain a "professionally prepared land-use plan" for Rockridge. This small group of professionals petitioned the City Planning Department for a study of the social and economic consequences of the plans prepared through the round table discussions. The city at first rejected the request and advised RCPC to commission its own study: the city had neither the staff or the financial resources. In the spring of 1972, following an RCPC petition drive which netted 1,800 signatures, the City Planning Department found a way of using HUD 701 program funds for a land-use impact study and issued a contract to Gruen + Gruen Associates.

With a planning study underway, RCPC could ask for a moratorium on new construction. The postponement would make sure that the emerging land-use plan would not be sabotaged and that the land-use in Rockridge would be the result of an explicit decision by City Council. Community support for the moratorium was not unanimous. The merchants, having been told how the BART station would raise property values and increase their clientele, opposed any changes that would reduce the development potential. Despite the residents' protests, the moratorium drive was defeated by City Council in the cold winter of 1972. Rockridge was to remain open to interested developers.

Reaction by residents took time to develop. The Rockridge Community Planning Council spoke on their behalf but during its early years the group did not have a community-based organization. It was an elite club which held meetings to discuss the future of Rockridge, attended City Council sessions and actively sought a professionally prepared comprehensive land-use plan. The belief in expertise persisted among the community's spokespersons.

In his quest for "professional guidance" the chairman of RCPC petitioned Norman Lind, director of the City Planning Department, for a planning study. "The City Planners," Ken Natkin suggested in a telephone interview, "should have hired a neighbourhood planning consultant firm to find out what the neighbourhood wanted, identify the neighbourhood's needs and develop a plan based on them." "The city did a terrible job," according to Ken. "Lind told us to, 'Go plan your own neighbourhood!' They were abdicating their responsibility."[26]

Summary:

The Rockridge residents had no say in the planning of the Grove-Shafter freeway and BART routes. The task was seen as a technical one, a job for engineers who could apply professional standards and who could be trusted to develop a route that was in everyone's best interest. We note that the route was not the most direct one possible. Had the freeway been located along Broadway, commercial properties would have been disturbed but the approach to the Oakland CBD would have been shorter. The engineers used their judgment as to which land-use was to be converted to freeway surface. The engineers' evaluative framework was structured in such a way as to make financial cost minimization the major criteria. The externalities created by the freeway were not seen as problematic.

The other land-use conflicts in Rockridge in the sixties were not resolved in a way that would inspire the residents' confidence in their city council. Their own representative, elected by all of Oakland, was their enemy in that he supported the College Avenue merchants' views. The only time the residents won a battle was when they and the merchants combined to oppose an insignificant entrepreneur. The history of Rockridge would not encourage the residents' faith in their ability to effect control over their own neighbourhood.

During the sixties the planners knew what kind of impact BART would have. Classical location theory points to the protrusion in the rent surface as a result of the introduction of a rapid transit station. The theory explains why density will and should increase in the station's vicinity. Empirical support for the theory existed. The land around stations in Toronto had been developed. Whether or not the circumstances in Oakland were the same as those in Toronto was not determined. The desire was for development, and this shaped their view of past examples.

Recommended changes in BART station areas were suggested in Oakland's general plan. In the 1960's, land-use planners were mostly development-oriented. The aesthetic appeal of large-scale intensifications of land-use was such that the changes could be labelled "community enhancing". The aesthetics of technological solutions no doubt affected the round table discussants who formulated the first land-use policy for Rockridge.

Questions of redistribution consequences did not emerge in the sixties. Doubt about the value of development never crept in to the planners' deliberations. Citizen involvement in the planning process was, however, becoming an issue, and the city planners sought this as a goal in itself to "help the overall decision-making process." The Director of the City Planning Department urged the residents to respond because the "future of the area depends ... on the desire of the businessmen here to strengthen their own community."

In the early 1970's, the residents became involved when they witnessed the first land-use response to the BART station: Bernie Leung's 83-unit apartment slab. Their response, however, was not to assist the development. While opposition to the BART development potential mounted in Rockridge, the citizen group claiming to represent residents sought professionally prepared plans for Rockridge. In early 1972, the citizens group handed back to the Oakland Planning Department the task of planning for Rockridge. Rockridge's residents were not reacting as Oakland City planners had anticipated. It remains to be seen whether the BART station's impact would meet the rest of the planners' expectations.

CHAPTER 3

EXPECTATIONS AND REACTIONS

> Like sovereignty, however, the will of the people is an abstraction. It serves many purposes, such as conferring political legitimacy on the acts and commands of different groups... The will of the people is always expressed by some of the people. It is process rather than substance.
>
> (Norton E. Long, The Goals of Rationality and Responsibility, P.A.R., 14, p. 25)

By 1972 two lines of thought and two groups claiming to represent the Rockridge residents had emerged. One wanted development and an increase in the value of their property. The other, the professionals, were after a sound plan which would benefit the community, not an ad hoc development process. Data that was gathered during 1972 on the residents' expectations and reactions will be examined to see whether or not these were in accord with those expressed by the citizen groups. We will try to determine the residents' mood: the extent to which the planners' prophecies were believed and whether or not the residents saw the prospective changes as enhancing the community. This will give us a sense of the kind of land-use plan that the residents wanted at this point in time.

Four questions will be addressed directly. First, how do Rockridge residents compare with residents of other areas in terms of demographic characteristics and their involvement in citizen group activity? Second, do Rockridge residents expect their neighbourhood's development potential to materialize? Third, how do they value the potential impact? Fourth, do people who are involved in community activities value and expect the same outcome as people who are not involved in community activities?

The Data:

The data come from the pre-BART "Urban Residential Environment Survey" (URES) conducted in the spring of 1972 by Donald Appleyard and Francis Carp. The surveys were conducted after the defeat of Leung's BART-related request for zoning changes to permit the construction of an 83-unit apartment building, but before the citizens' groups developed community support and before the organizations were able to organize concern regarding the nature of the neighbourhood's future into political pressure. A complete description of the sampling technique, interview methods and survey instruments is found in the Institute of Urban Development's publication listed in the bibliography. A brief description of the data base follows.

Some 2,550 people, representing 0.6 percent of households within one mile of the BART tracks, were successfully interviewed between May 31 and July 19, 1972. Information was also obtained on 550 households located in areas within one-eighth of a mile of selected stations and selected intermediate points along the tracks between stations. Approximately 20 interviews were carried out in each "special site". In both samples, the "Gallup Procedure" was used to select the respondent within a household: when more than one adult was at home the interviewer asked to speak with the youngest male over 18 and, if no male was at home, with the oldest female, 18 or over. A total of 59 percent of all interview attempts were not successful; 29 percent because no interview was obtained after three visits and 27 percent because the respondent refused to be interviewed.

The two data bases, the general and the special site survey, were merged for the purpose of this study. Since the intention was to compare

Rockridge with other areas, a sub-file was created containing observations on 1,043 respondents living near the following stations: Rockridge, MacArthur, Ashby, North Berkeley, El Cerrito, Lake Merrit, Bay Fair, and Union City. Two of the sites are in the Rockridge area; one is within an eighth of a mile of the BART station on College Avenue, the other is further east and at the boundary of the Chabot Canyon neighbourhood. Twenty interviews were conducted within each of the two Rockridge areas and another 111 took place in households drawn at random from the broader corridor within one mile either side of the tracks and extending from the Oakland hills to half way between the Rockridge and MacArthur stations. The sample area extends somewhat beyond our study area and complete congruence cannot be established.

The objective of the Urban Residential Environment Survey was to record perishable pre-BART data on the residential environment. It was pre-BART in the sense that the system was not yet operating. The survey solicited opinions and descriptions of residents living in the vicinity of the BART system. It provides an excellent description of what the Rockridge residents thought was about to happen at the time when citizen group leaders were calling for comprehensive land-use planning studies.

Of the 700 items on which data were gathered, approximately 120 were considered relevant to this study and were selected for preliminary analysis. The length of time the respondents lived at their present address as well as their basic demographic characteristics are described. The number of friends and relatives living in the neighbourhood and the extent to which the person maintains contact with them is included. So is their degree of involvement in community activities, their evaluation of the neighbourhood and city block relative to others, the extent to which they would desire to change the area if they could, and the degree to which they believe community groups can change local conditions. The respondents' feelings about having the BART system are solicited on a seven-point scale. The respondents' feelings about having BART run near their home is assessed as well as the degree to which they intend to make use of the system. The extent to which respondents agreed or disagreed with various hypothesized BART impacts is ascertained. Whether or not the respondent acted to help or to oppose the introduction of BART into their neighbourhood is listed. The relative importance of various neighbourhood attributes is described. One variable describes whether or not the respondent expects BART to change the desirability of the area as a place to live, in what direction the change will occur, and to what extent. Table 1 lists the dimensions across which expectations were determined.

The General Approach:

Since we expect a BART impact to be greatest at closest proximity to the system and to attenuate with distance from it, we expect the data to show evidence of this attenuation. Where possible, residents living at a distance from the system will function as a control group.

The comparison between expectations and reactions of the Rockridge sample and that drawn from residents in other station areas is expected to demonstrate a higher awareness of BART-related impacts owing to the activities of Oakland city officials vis-a-vis development in Rockridge.

Involvement in Community Activities:

If we believe that wealthier and better educated groups are the active and vocal representatives of a community's needs, then we can expect

TABLE 1

DIMENSIONS ACROSS WHICH THE EXPECTED BART IMPACTS WERE ASCERTAINED BY THE URES INTERVIEWERS

1. A lot of homes will go up for sale.
2. More high-rise buildings will be constructed.
3. More residential development, subdivision will be built in this area.
4. Property will be bought up by people with lots of money.
5. More apartment buildings will be built.

6. More stores will come to this area.
7. More offices and industry will come to this area.
8. There will be less open space in this area.
9. More parking lots and garages will be built.
10. More undesirable types of people will move into this area.

11. The BART stations and facilities will provide hiding places for shady characters.
12. Automobile traffic on the streets around my home will be increased.
13. There will be increased parking problems for local residents.
14. There will be less air pollution because of fewer cars on the road.
15. Automobile traffic on nearby freeways will be reduced.

16. The area will generally go down hill.
17. There will be more trash and litter in the streets.
18. There will be more dirt and dust in the air.
19. In general, the area will be a lot safer than it is now.
20. People will have more pride in being a part of a modern city.

21. Taxes will go up
22. Some stores in the area will suffer since people will shop elsewhere.
23. The area will be a better place for children to play.
24. The area will be a better place for people to take walks, enjoy the outdoors, exercise.
25. The area will be a better place for neighbours to get together.

26. The area will be better looking.
27. The area will be quieter.

this to occur in Rockridge. Table 2 compares income and education levels of the URES respondents living in different areas. Only row percentages are given in the tables. Of the 151 Rockridge area respondents, 21.8 percent indicated that their household earned more than $15,000 a year in 1972. This compares to 12.8 percent in other East Bay station areas. The difference is significant at the .01 probability level. When comparing the income levels of people living "close" to the station (within three-quarters of a mile) to those living further away, the differences become greater: more than 25 percent of the households in the immediate station area earned more than $15,000 a year.

Table 2 shows a statistically significant difference among education levels of the different groups. Thirty-nine percent of the respondents living close to the Rockridge station have at least one college degree. More than 15 percent have at least some post-graduate level education. Since university educated people are considered to be more articulate than people with less education, we may therefore expect Rockridge residents to be more vocal than residents of other East Bay BART station areas, and more prone to pursue their interests at City Hall.

Table 3 presents statistics on the frequency of resident involvement in community activities; that is to say, evaluation of the "ability of local power to change their neighbourhood" and assessment of their desire to make changes if they could. Surprisingly, no statistically significant difference in the frequency of involvement could be discerned. However, the data suggest that the respondents living close to the Rockridge station site were the least involved in community activities.

We find strong differences in the respondents' evaluation of their ability to effect changes in the neighbourhood. While the general attitude

TABLE 2

COMPARISON OF INCOME AND EDUCATION LEVELS OF ROCKRIDGE RESIDENTS WITH OTHERS

Income of Household (Thousands)

	<$7	$7 to 14.9	$15+	(n)	X^2	Sig.
R. far	30.0	53.7	16.8	(80)	2.6	(.276)
R. close	28.2	45.1	26.8	(71)		
Other close	46.9	39.7	13.4	(209)	10.4	(.006)

Education of Respondent

(years at school, college, university degree, post-graduate education)

	primary			secondary			post-grad			
	< 8	9-11	12	1-2	3	Deg.		(n)	X^2	Sig.
R. far	11.2	11.2	30.0	23.8	6.3	13.7	3.7	(80)	16.8	(.010)
R. close	1.4	4.2	32.4	13.7	2.8	23.5	15.5	(71)		
Other close	10.5	16.7	20.6	20.1	9.6	11.0	11.5	(209)	24.6	(.000)

Numbers listed are row percentages.

TABLE 3

COMPARISON OF INVOLVEMENT IN COMMUNITY ACTIVITIES, EVALUATION OF LOCAL POWER AND DESIRE TO CHANGE THE NEIGHBOURHOOD

Frequency of Involvement in Community Activities

	Frequent			Never	(n)	X^2	Sig.
R. far	16.2	23.8	25.0	35.0	(80)	3.34	(.340)
R. close	8.5	18.3	31.0	42.3	(71)		
Other close	13.4	16.7	32.1	37.8	(209)	1.43	(.700)

Evaluation of Local Power to Change the Neighbourhood

	Can Change			Not Worth Trying	(n)	X^2	Sig.
R. far	15.0	57.5	20.0	7.5	(80)	3.41	(.330)
R. close	14.1	49.3	32.4	4.2	(71)		
Other close	21.5	55.5	15.7	7.7	(209)	10.67	(.014)

Would Make Changes in Neighbourhood if Could

	None	Some	Many	(n)	X^2	Sig.
R. far	17.7	55.0	27.5	(80)	.771	(.680)
R. close	19.7	47.9	32.4	(71)		
Other close	24.9	52.6	22.5	(209)	2.91	(.230)

in all neighbourhoods is optimistic, a significantly larger number of Rockridge residents believe that they could change very little. The history of Rockridge may have diminished residents' confidence in the Oakland City Council's responsiveness to their needs.

The last section of Table 3 shows that the larger proportion of Rockridge area residents would make changes in their neighbourhood than in the other station areas. This difference, however, is not statistically significant.

The Expected Land-Use Impact:

Table 4 presents the land-use impact expected by the 151 Rockridge area respondents. Table 4 ranks their expectations according to proportion of respondents agreeing with the statement. The strongest agreement is with the assertion that taxes will increase. Although the question did not specify property taxes, the inference can be drawn that people expected their property assessments to increase and therefore the price of housing to go up. Unfortunately, the phrasing of this question does not allow us to obtain information regarding the homeowner's reaction to the increase in wealth. The next most agreed upon statement was one used to promote BART: most Rockridge respondents thought that BART would reduce freeway traffic. Respondents next agreed upon the reduction in air pollution, and after this comes the apartment boom. More than half the Rockridge respondents feel that "people will, as a result of BART, have more pride in being a part of a modern city." The most agreed upon statements describe the impact that the planners had been forecasting: BART is expected to ease congestion, reduce pollution, modernize the city and effect a minor boom in apartment construction with its associated

TABLE 4

RANKING OF EXPECTED IMPACT IN THE ROCKRIDGE GENERAL AREA

(N = 151)

	% Agree	% Disagree
Causes taxes to go up	66.2	12.6
Causes less freeway traffic	59.6	27.7
Causes less air pollution	57.6	33.8
Causes apartments to be built	52.3	27.8
Causes pride in modern city	50.3	18.5
Causes property to be bought by rich	47.7	32.5
Causes parking lots to be built	46.4	42.4
Causes local parking problems	45.7	41.7
Causes less open space	45.7	37.7
Creates hiding place for undesirables	44.4	38.4
Causes highrise construction	43.7	34.4
Brings in new stores	35.1	41.7
Causes street traffic to increase	34.4	45.7
Causes local stores to suffer	33.8	48.0
Causes homes to be built	32.5	45.0
Causes appearance of area to improve	29.1	42.4
Causes more trash on streets	29.1	47.0
Improves outside area for walks, etc.	25.8	43.7
Brings in new offices or industry	22.5	55.6
Causes homes to go up for sale	22.5	55.6
Causes dirt and dust in air	21.2	60.3
Brings in undesirable people	19.9	48.3
Creates a better place for children	19.9	43.7
Increases safety of area	18.5	33.1
Improves neighbourhood contacts	17.9	38.4
Causes area to go downhill	13.9	64.2

price and tax adjustment.

Most Rockridge residents (64 percent) disagreed that BART would cause the area to go downhill. BART's impact had been advertised as an "enhancement" and perhaps the message was getting across. People generally did not believe that BART would cause a lot of homes to come on the market: people would not be induced to move or to sell and reap windfalls. Nor did most residents think that BART would bring office or commercial development. Most respondents did not believe that undesirable people would come in to the neighbourhood, that street traffic would increase, that local stores would suffer or that more trash would be found on the streets. With the exception of taxes, the expected impact was favourably viewed.

Out of 151 Rockridge respondents, 71 live within three-quarters of a mile of the station site. Beyond this radius, the households interviewed do not consider themselves to be Rockridge residents and in fact, could belong to other neighbourhoods. Contingency tables were prepared to test for differences in expectations between the respondents who live near the station, and the control group living further away. Table 5 presents the expectations which attenuate with distance from the station. They are ranked according to the statistical significance of each difference. The percent of respondents both in the station vicinity and in the control area that agree with the assertion is given. The expectations that distinguish the station area residents from those in the control group tend to have negative connotations. People near the station believed that traffic would increase, more parking lots would be built, parking problems would emerge, and the amount of open space would decrease. The respondents near the station expected apartments and highrise buildings

TABLE 5

EXPECTED BART IMPACT

Comparison of the Rockridge Station Area and Rockridge Periphery

		Significance of X^2	% Agree R. Close	% Agree R. Far
1.	More parking lots	(.000)	62.0	32.5
2.	Street traffic to increase	(.000)	50.7	20.0
3.	Apartments built	(.001)	67.6	38.7
4.	Local parking problems	(.001)	55.2	33.7
5.	Less open space	(.007)	55.2	33.7
6.	Highrise construction	(.015)	52.1	36.1
7.	Property bought by rich	(.019)	59.2	37.2
8.	Undesirables to move in	(.021)	36.6(d)*	58.7(d)
9.	Dirt and dust in air	(.032)	28.2	15.0
10.	Better looking area	(.048)	21.1	36.2
11.	Better outside area for walks,etc.	(.049)	52.1(d)	36.2(d)
12.	Taxes to go up	(.053)	71.1	61.2
13.	Quieter area	(.066)	50.5(d)	41.2(d)
14.	Area to go downhill	(.076)	18.3	10.0
15.	Homes to be sold	(.097)	28.2	17.5

*(d) indicates that the percentage refers to those who disagree with the statement.

to be constructed and property to be bought by the rich. The BART station is seen to generate new development, more traffic and to make houses affordable only by the rich. In addition, the table reveals that respondents living near the station are less convinced that the BART impact will not bring undesirable people; they disagree more strongly with the assertion that BART will cause the area to become better looking, make it quieter, or make the outdoors more enjoyable. A proportion of the respondents living in the vicinity of the Rockridge station believe that BART will cause the area to go downhill. The association is evident: people living near the BART station expect the quality of their neighbourhood to decrease, as distinct from those further away who subscribe to the more widely held optimism vis-a-vis BART's impact.

Table 6 compares the expectations of the 71 people living in the vicinity of the Rockridge station to those of the 209 respondents living within three-quarters of a mile of each of the other East Bay stations. The list is very similar to that produced by the previous comparison between the Rockridge group and the more distantly located control group. The exceptions are in the "highrise", "parking lot" and "sale of homes" impacts. The proportion of the Rockridge group agreeing with these statements is similar to that of the other station areas group. A larger proportion of Rockridge respondents believe that BART will cause apartments to be built. This is the only direct development relevant impact about which the Rockridge respondents differ in their expectations from those in other station areas.

Most of the differences between these groups concern side effects - the effects that an impact statement should reveal. In Rockridge, BART is expected to increase street traffic, parking problems and reduce air quality. These impacts could be caused by people moving to and from the

TABLE 6

EXPECTATIONS UNIQUE TO ROCKRIDGE

Rockridge Station Area and Other East Bay Station Areas

		Significance of X^2	% Agree Rockridge	% Agree Other
1.	Street traffic increases	(.000)	50.7	23.9
2.	Local parking problems	(.000)	55.2	37.3
3.	Better outside area for walks, etc.	(.001)	52.1(d)*	31.6(d)
4.	Property bought by rich	(.004)	59.2	37.3
5.	Apartments to be built	(.005)	67.6	51.7
6.	Less open space	(.005)	59.2	39.2
7.	Dirt and dust in air	(.006)	28.2	12.0
8.	Quieter area	(.009)	60.5(d)	39.2(d)
9.	More trash in streets	(.013)	36.6	19.6
10.	Better place for children	(.017)	47.9(d)	30.1(d)
11.	Undesirables move in	(.019)	36.6(d)	54.1(d)
12.	Better looking area	(.042)	52.1(d)	35.4(d)
13.	Local stores to suffer	(.078)	36.6	28.2
14.	Area to go downhill	(.094)	18.3	9.6

*(d) indicates that the percentage refers to those who disagree with the statement.

station and they need not be associated with the BART induced development potential. Other impacts could be seen as side effects of development. Less open space, worse outdoor environment, undesirables moving into the area, decline in the area's appearance, property bought by the rich, area to go downhill are examples of the negative reactions that distinguish the Rockridge population from those living in the vicinity of other East Bay station areas.

In 1972, the Rockridge residents appeared to have a clearer perception of the side effects of development than residents of other areas. More than two-thirds of Rockridge residents believed that BART would cause apartments to be built in the area. We can attribute the increased awareness of Rockridge residents to the prophecies that were made by city officials, to the Rockridge Community Planning Council's organized opposition to Bernie Leung's proposed apartment building and to the editor of the Claremont Press community newspaper.

Reactions:

The URES solicited the respondents' "feeling about having BART near their home" and their general preconception of BART's impact on the quality of life in their neighbourhood. Table 7 presents the responses. The great majority of respondents were either glad or indifferent about having BART near their homes. The proportion of people who are sad to have BART near their homes and who feel that the BART impact will destroy their neighbourhood is larger in Rockridge than in the other station areas, and the difference is statistically significant at the .001 level of probability. If an organized reaction could develop to prevent BART from having a land-use impact it would develop in Rockridge. In Rockridge, fifteen percent of the people expressed a definite negative attitude towards having BART near their homes.

TABLE 7

REACTIONS TO BART'S IMPACT

Feeling About Having BART Near Home

	Glad	Indif.	Sad	(n)	X^2	Sig.
R. far	46.5	48.7	4.0	(80)	7.18	(.127)
R. close	50.7	33.8	15.5	(71)		
Other close	52.6	43.5	3.9	(209)	19.07	(.001)

Preconception of BART's Impact on Neighbourhood

	Better	Same	Worse	(n)	X^2	Sig.
R. far	31.3	58.7	10.0	(80)	9.94	(.007)
R. close	29.6	40.8	29.6	(71)		
Other close	40.7	49.8	5.6	(209)	17.10	(.000)

Expectations, Reactions and Community Involvement:

The people who thought that BART would make the area a worse place to live in expected the largest impact across all the dimensions listed in Table 1. The residents who foresaw the greatest impact, did not see it as "community enhancing". Table 8 presents the comparison of expectations held by people who thought the BART impact would make the area a better place to live and those who thought it would become a worse place.

The expectations of those involved in community activities were compared to the expectations of the respondents who were rarely or never involved. Only two differences were found to be statistically significant

TABLE 8

EXPECTATIONS AND REACTIONS OF ROCKRIDGE AREA RESIDENTS

		Sig.	Worse & Agreeing	Better & Agreeing
1.	Street traffic increases	(.000)	89.7	17.4
2.	More trash on streets	(.000)	82.8	19.6
3.	Less open space	(.000)	82.8	34.8
4.	Local parking problems	(.000)	82.8	43.5
5.	Better place for children	(.000)	79.3(d)*	30.4(d)
6.	Highrise construction	(.000)	79.3	41.3
7.	Better looking area	(.000)	72.4(d)	19.6(d)
8.	Dirt and dust in the air	(.000)	65.5	10.9
9.	Hiding place for undesirables	(.000)	62.9	29.0
10.	Makes area safer	(.000)	58.6(d)	8.6(d)
11.	Area to go downhill	(.000)	41.4	10.9
12.	Reduces freeway traffic	(.000)	37.9	76.1
13.	Reduces air pollution	(.000)	20.7	69.6
14.	Homes to be sold	(.001)	51.7	15.2
15.	Better area for walks, etc.	(.002)	72.4(d)	26.1(d)
16.	Pride in modern city	(.004)	24.1	56.1
17.	Apartments to be built	(.012)	69.0	65.2
18.	More parking lots	(.017)	77.4	47.8
19.	Undesirables to move in	(.025)	37.9	17.4
20.	Brings new stores	(.026)	55.0	39.1
21.	Property to be bought by rich	(.085)	69.0	50.0
22.	Better place to meet neighbours	(.089)	55.2(d)	28.3(d)
23.	Taxes to go up	(.187)	75.9	58.7
24.	Offices to be built	(.290)	37.9	19.6
25.	Homes to be built	(.760)	69.0	50.0

*(d) indicates that the percentage refers to those who disagree with the statement.

at the .10 level of probability. Of the involved residents, 45 percent believe taxes will increase as compared to 75 percent of those not involved. Of those not involved, only 25 percent believe that BART will cause "homes to go up for sale" whereas 47.1 percent of the involved believed this. The expectations across the other dimensions were not statistically different.

Further tables were prepared in search of demographic differences between involved and not involved residents. Differences were not found between these two groups in marital status, number of children, age, education level, tenure status, frequency of visiting friends in the area, length of time living in the area, desire to change the area, and their evaluation of the ability of local power to change the area. Only two demographic differences were found: 43 percent of those involved in community activities had children who attended school compared to 23 percent of the not involved population. Income level also distinguishes the two groups. The involved group had fewer households in the under ten thousand dollar a year or in the over fifteen thousand dollars a year household income groups than the uninvolved group: middle income people tend to be more frequently involved in community activities than low or high income groups. The results of this analysis do not lead us to believe that the general demographic characteristics of these two groups will cause a larger proportion of the involved people to favour BART's impact.

Table 9 shows the relationships between respondents' feelings about having BART near their homes "and a preconception of the impact on the neighbourhood as a place to live" and their degree of "involvement in community activities." Those involved in community activities felt

TABLE 9

REACTIONS BY PEOPLE INVOLVED IN COMMUNITY ACTIVITIES

Feeling About BART Near Home By Involvement in Community

	Rockridge Area			
	Glad	Indif.	Sad	(n)
Involved	68.4	26.3	5.3	(19)
Sometimes	62.5	31.3	6.3	(32)
Hardly	50.0	38.1	11.5	(42)
Never	32.8	55.2	12.1	(58)

$X^2 = 11.70$ (.069)

Preconception of Impact By Involvement in Community Activities

	Rockridge Area			
	Better	Same	Worse	(n)
Involved	47.4	47.4	5.3	(19)
Sometimes	46.9	43.8	9.4	(32)
Hardly	23.8	52.4	23.8	(42)
Never	20.7	53.4	25.9	(58)

$X^2 = 12.83$ (.046)

glad about BART being near their home and tended to think that the impact would generally improve the neighbourhood. While the majority of those who were hardly or never involved in community activities thought that BART would not affect the area as a place to live, a substantial proportion felt that the BART impact would make the area a worse place to live in. These sentiments were not shared by the one-third of the respondents who were only sometimes involved in community activities. Significant relationships were not found in the data collected from people living in the other East Bay station areas. In 1972, Rockridge community organizations did not accurately reflect the Rockridge residents' reactions and feelings toward the potential BART impact. The people who were involved in community activities had a much more favourable reaction to the expected BART impact.

Summary:

While the Rockridge station area residents tend to be better educated and with higher incomes than those who live in the vicinity of other East Bay stations, they were less optimistic about their ability to effect changes in their neighbourhood. Rockridge residents participated in community activities to the same extent as other area residents; however, the Rockridge participants tended to see BART's impact as more favourable. The largest proportion (86.2 percent) of those who thought BART would reduce the residential quality of their neighbourhood did not participate in community activities. Of the people who saw BART as improving the area, 56 percent were at least sometimes involved.

The Rockridge station area residents in general expected greater changes than residents elsewhere, perceived more frequently the negative side effects, and tended to be more pessimistic about the area's future. Given the history of Rockridge, these findings are not surprising. Rockridge residents suffered the freeway-BART impact and could do little to avoid it. They had repeatedly heard from city officials about the great changes that were in store, yet instead of seeing them as enhancing the community, they perceived their external consequences.

In early 1972, when these expectations and reactions were forming, the Rockridge community organizations did not reflect the general sentiments in the community, but took a pro-BART development stance. The community's desires were not, at that stage, being expressed through the community organizations.

CHAPTER 4

THE ROCKRIDGE LAND-USE PLAN

> Political rationalization occurs through the enlightenment of political will, correlated with instructions about its technical potential. This dimension is evaded when such enlightenment is considered impossible because of the need for authoritative decisions, or superfluous because of technocracy. In both cases the objective consequences would be the same: a premature halt to possible rationalization and the illusory attempts of the technocrats to have political decisions be directed only by the logic of objective axigency, would justify the decisionists by leaving sheerly arbitrary what remains an irreducable remnant of practice on the periphery of technological rationality.
>
> (Habermas, Toward a Rational Society,
> Beacon Press, 1971, p. 80)

In the late sixties, the Oakland General Plan was calling for spines of high density construction along BART. At the same time, it sought to increase citizen participation in the planning process. The goals were seen as compatible, as development would be "enhancing the community". The city planners, by inviting citizen group participation, were changing the manner of making land-use decisions. Instead of remaining drafting-board land-use planners, they were accepting a role as facilitators of social change. Despite this change in posture, the planners appear to have held on to the old value framework which supported development: their 1969 report on Rockridge presented the developers' viewpoint.

After the citizens' reactions in 1970 against Lueng's proposed apartment building, the shift in the Oakland Planning Department's stance became clearer. Yielding to the residents' request for a comprehensive land-use impact statement, they gave Gruen & Gruen Associates the task of providing the "information needed to predict the land-use potential and other socio-economic changes that would occur with and without concomitant changes in city policies and actions."[1]

In this chapter we will trace the history of Rockridge from 1972 through 1975 when a land-use plan was finally accepted. We keep in mind that, before the Gruen report came out, Rockridge residents had a generally negative reaction to the expected BART impact. This reaction had been communicated to the Planning Department during the residents' unsuccessful quest for a moratorium on new construction. The potential for a land-use conflict existed, and Gruen & Gruen Associates' socio-economic impact statement was to be the wind that would fan it into flame.

The Consultants' Impact Statement:

Gruen & Gruen Associates claim not to have studied "the effects of other urban transportation systems in order to develop analogies that could be used to make predictions about the effect of BART..." Instead, they used other cities' experiences in order to "develop a framework that would suggest the type of impacts and forces we should be looking for in order to predict significant primary effects."[2] In other words, they would develop a theory of land-use impacts and then apply it. Gruen & Gruen Associates recognized that the improved access would:

> ..... interact with diverse and complex pre-existing economic and social forces. Many of these interactions will not work out to affect any change in future land-use patterns or socio-economic conditions. As Professor Vincent Roggeverrs pointed out in a conference on BART impacts, sometimes nothing has happened around some rapid transit station of systems that have been operating for 60 to 70 years.[3]

The primary impacts of a transit system were seen to be its lowered travel costs, increased advertising value or exposure of specific locations, and changed neighbourhood boundaries and environmental qualities. For Rockridge, these impacts were considered positive:

> In general the forces at work are such that BART impacts will enhance an already desirable area, increasing its relative quality and thereby increasing the demand for housing and commercial space. The result of this increased attractiveness when considered in terms of the alternatives that confront demanders of space determine that the rents which can be obtained for new construction in Rockridge will increase from the levels in effect before the BART impact.[4]

Land-use conversion would occur when the rents obtainable by building a new building exceeded the cost of erecting it. Gruen & Gruen Associates estimated the amount people would be willing to pay for different classes of apartments across Rockridge. By determining the construction cost, the cost of land and the permissible density under current zoning, the consultants could assess the feasibility of land-use conversion. When estimating the contract rents for apartments, the consultants considered the environmental characteristics of the different sub-neighbourhoods in Rockridge. An 800 square foot apartment in a well constructed wood frame building located on Telegraph Avenue was expected to yield $200 rent per month while a similar one north-east of the station would yield $80 more. The consultants believed that the differences in neighbourhood characterization would be worth at least $80 per month to the potential renter. The consultants stress that,

> These rents and prices are for new construction in the neighbourhoods given the existing social, economic, and physical attributes, ... and after the BART system is in full operation. ... As new construction and other improvements begin to change the existing social area, the forecasted rents and prices will also change. Thus, our forecasts will

> no longer apply as soon as there is enough new development to change the characteristics of the existing neighbourhood social area.[5]

The consultants concluded that conversion to more intense land-uses was feasible across most of Rockridge. Low density garden apartments would be built in portions of the attractive areas east of College Avenue. High density apartment construction would occur in the area north-west of the station and along College Avenue. Highrise buildings would be limited to the strip along Broadway and College Avenue. Highrise construction on the foot-hills side of College Avenue was deemed feasible if present zoning was changed to allow it.

Gruen & Gruen Associates estimated the amount of new construction that would occur in Oakland over the next 10 to 15 years, and then made a guess as to the proportion that would come to Rockridge. Of the 17,000 new apartments expected in the City of Oakland, 6 to 8 percent could be expected to locate in Rockridge. The area could expect to receive approximately 1,200 new dwelling units within 10 years of BART's opening. The demand for office space in Oakland would increase, causing the addition of five and a half million square feet of floor area. The experts judged that Rockridge would absorb from 120,000 to 150,000 square feet of office space. About 400,000 square feet of retail space was foreseen for Rockridge. This new floor space could be housed in 15 8-storey slab apartment buildings, one small CBD-type office building and 20 average sized supermarkets. If city policy did not change and new developments did not alter the environmental characteristics and therefore the appeal of Rockridge, then some $40 to $50 million worth of new construction was projected for the one square mile of predominantly single-family houses. This would increase the tax revenues gained from North Oakland by some $2 million.

This was the extent of the impact Rockridge could expect if no zoning changes were made, and:

> ...in general, the existing zoning will limit new development to an overall lower density than would result without any density controls. Therefore, pressures for zoning changes to allow higher density development at some locations will exist ...[6]

Economic and social impacts of the proposed development are presented in a table at the end of their report. Housing quantity is expected to increase: its quality will remain about the same, except in the deteriorating parts of the west side. Housing prices and rents will increase where quality remains the same and will drop where quality decreases. The amount of retail space will increase in the area to the east of College Avenue and in the zone just north-west of the station. Office space will locate in the same area as retail. These were seen as the "primary effects of future land-use changes in the Rockridge station area."

Secondary effects include an increase in the assessed value of property on the east side, no change just west of College Avenue, and a decline in the area near Telegraph Avenue. School enrolment would decrease in the more affluent part of Rockridge, but the social make-up would remain unchanged. Overall environmental quality, amenity level, visual appearance, landscaping, noise level, air quality, and general quality of buildings would improve across the east side of Rockridge where most of the new construction was expected. The environment to the east of College Avenue would remain the same, and deterioration was expected to continue in the white-black transition zone. The net fiscal impact, tax revenues less public expenditures, would change in the same direction as the quality of the environment. Overall, the projected BART impact, according to the evaluative framework of the consultants, favoured residents in the more affluent part of Rockridge.

While the methods Gruen & Gruen Associates used to determine the BART impact were more complicated and time-consuming than any that had previously been used, the basis for forecasting the magnitude of the impact remained the same: predictions were based on experts' judgment. The residents, instead of getting a social and economic impact statement, got another financial feasibility study. However, the consultants did introduce an important addition: they presented alternatives.

The City Planning Department's Report:

The Gruen report was presented at a public meeting in November, 1973. Claude Gruen told the audience of 150 that BART would bring development: "Generally," he said, "what is built will result from what is allowed."[7] The Oakland City Planning Director, Norman Lind, suggested that the study "should be regarded as a tool for making decisions, a device to provoke community response." He wanted to assure the residents that "the neighbourhood wants will have influence" and "the more of you who are organized and who take your views to the Council, the more responsive the Council will be."[8] The city planners appear to have completed their role transition.

In January 1974, the Oakland City Planning Department staff reworked the Gruen report and presented a paper called "Alternatives for Rockridge." Their stance changed from a pro-development orientation to one indirectly supporting the community viewpoint. They shifted their emphasis from spatially restructuring the city to involving the citizens in neighbourhood planning. They advised the residents on zoning techniques: expertise was shared and the planners became facilitators.

The opening comments in "Alternatives for Rockridge" are revealing for they describe the city planners' stance and view of the decision-making process:

> This report makes no recommendations as such.
>
> Instead it analyzes conditions in Rockridge as they are now and will be under current trends ... and then sketches out alternative strategies which might be pursued to alter the course of events ... However, the alternatives are really concepts rather than proposals, and this report makes no attempt to recommend any one of them over the others.
>
> Nor can it be said that the city as such is 'offering' these alternatives to Rockridge. Even if poeple in the area decide on one of these alternatives as their preference there is certainly no guarantee that the City Council would decide - or could afford - to implement it ...
>
> These alternatives are posed as a basis for discussion, by people in Rockridge with City officials. This discussion could culminate in important policy decisions for the area. By depicting a series of broad alternatives ... this report can therefore be viewed as an aid to decision-making.[9]

Whereas in the fifties residents were excluded from the planning process and in the sixties community involvement was sought in the form of tree-planting and clean-up, fix-up drives, now the City Planning Department explained the various kinds of policies that could affect the future of Rockridge and left the door open for community participation and an explicit political decision.

The five alternative land-use plans presented by the Planning Department were similar to those outlined in the Gruen report. The planners represented the Gruen study in a language that could be easily understood by residents: maps showed the potential development consequences of the alternatives. The preservation alternative down-zoned everything. Under this system, no new duplexes were permitted or conditionally permitted in residential areas. The shopping areas would receive the most restrictive commercial zoning used in Oakland, and the maximum height of buildings was limited to 45 feet. Another option, the maximum development plan, down-zoned some of the peripheral residential areas and increased permissible density around the station and along College Avenue. This plan brought Rockridge up to 1,500 new housing units, 300,000 square feet of office space and 600,000 square feet of retail. It would bring some 60 to 70 million dollars worth of new construction to North Oakland and 2 to 3 million dollars in annual taxes to the city's coffers.

For each of the five alternatives, the Oakland Planning Department presented tables listing the likely major effects of implementing them. The dimensions across which the impact is measured are: total housing units, physical quality of housing, median housing rent and value, median income, total commercial floor space, visual scale, overall quality of environment, total assessed valuation and traffic on major streets. These dimensions are quite different from those used in the URES chapter. Alternative I, the minimum development alternative, would affect the "overall quality of the environment by slightly improving it in some areas and by not changing it in others. No significant change or slight increases were foreseen for the other dimensions.

Alternative V, the agressive development option, was seen by the planners to offer from minor to major improvements in the overall quality of the environment. Even at this time development was associated with improvements in the environmental quality. Chapter 3 showed that the Rockridge residents did not share this view.

The Immediate Reactions:

In the fifties and sixties, residents had organized around other specific issues. The main organization concerned with development options was the College Avenue Merchants' Association which promoted the interests of the merchants. In 1972, the group's spokespersons were looking forward to the BART-induced development potential, especially for local realtors.

The Rockridge Community Planning Council (RCPC), formed in 1972 to express one line of community opinion, had, by 1973, changed its stance. Ken Natkin, an architect and the chairman of RCPC, prepared a plan to show how high density development in the immediate station area could occur without disrupting the neighbourhood. It was found to be unacceptable to many RCPC members and was not given any publicity. By November 1973, the residents' mood had changed. Joel Kotkin, writing in the November 15, 1973 "Bay Guardian", describes the prevalent images:

> Walk into Rockridge today, and you'll see one of Oakland's finest remaining neighborhoods. Single family houses, comfortable old brown shingle buildings, a bustling area of community-oriented shops along College Avenue. While the rest of Oakland gets increasingly segregated into poor, minority districts in the flatlands with middle-income white tract housing on the hillsides, this North Oakland neighborhood has kept its unique, integrated (80% white, 20% black) character. In fact, while Oakland's own 1969 planning study called "the majority" of the city's residential areas "dreary and uneventful," City Councilman George Vakasin admits Rockridge is "one of the few exceptionally good areas of the City."
>
> Walk into Rockridge five years from now, and you may be confronted by high-rise apartments, lots of banks and expensive specialty stores, parking garages and a population composed of transient, upper-middle-class secretaries and executives from San Francisco corporations who see Rockridge as just another bedroom community. Because, unfortunately for Rockridge, as well as being a unique community, it is a stop on the BART Concord-Daly City line. And that highly dubious honor opens it up to the developers, realtors, and new urban commuters who could destroy its fine small town atmosphere.

> Part of the grand scheme for the "new" Rockridge is a sparkling new image. The idea of the planners and developers is that Rockridge should follow the lead of San Francisco's Union Street, where an old neighborhood was transformed into a high-class commercial row accommodating transients of the monied sort, from society matrons to swinging singles.[10]

At the same time a schism was developing among Rockridge merchants. Joel Kotkin described the positive attitude of the realtors. Rudy Postage, realtor and owner of the largest amount of developable land in Rockridge, "always thought that BART was going to take a lot of tenants out of San Francisco and bring them here."[11] His business partner, John Mitchel, realized that the 22-minute ride from Rockridge to the San Francisco financial district via BART will be "faster than the trip from most parts of San Francisco." Large-scale development would change the structure of the community, and future residents, Mitchel is reported to have said, would not be too concerned about troublesome things such as schools. "As far as high-density is concerned," he told the reporter, "there will be more couples without children, and singles ... most of the people with children are moving to the suburbs, let's face it." Ruth Giovanetti, a realtor and the secretary of the College Avenue Merchants' Association, asserted that Rockridge "is going to go high rise, ... just like San Francisco."

Local merchants, however, who were involved in marginal or innovative enterprises, feared that the BART impact may raise rents driving them out of the area and possibly out of business. "We haven't reaped any benefits of the BART station, but were hurt by the speculation. If they turn this place into an Orinda, I don't know where the hell we're going to go." - Ron Wilson of the "Alternative Foods" Cooperative. "It's good to have a place where people with a limited amount of money can build a business ... The thing I dislike about Union Street is that people who shop there don't live there and that creates a different sort of thing." - John Chalick, owner of the delicatessan "Curds and Whey". "It's a lot of little people who get hurt all the time. BART will just bring highrise buildings, higher rents, and higher taxes ... It's not helping us now. It might just help a lot of people from out of town -- they don't pay the taxes." - Anise Fink, of "Dick's Burgers and Shakes". Redistribution consequences were expected. The images of other areas that had turned into expensive "classy" shopping strips were applied to Rockridge. Whereas the planners once had the same images and saw them as "community-enhancing", the people who lived and worked in the area saw them as destructive. Joel Kotkin, the investigative reporter, sought to find out what was actually happening in the way of land assembly. By reviewing the assessment roll he found the name of Bette Baley listed as the owner of some $400,000 worth of property in the BART station area. At first he could find no one who knew who she was. Later, in the records at the County Courthouse he discovered that Bette Baley was the maiden name of the pro-development realtor, Rudy Postag. The impression was formed that "Rudy's hiding behind the front because he doesn't want people to know what he's up to." One Oakland official is reported as having "the impression that there may be people who are interested in development in Rockridge but they are hiding in the woodwork."[12]

The Emergence of an Organized Community Response:

In 1973, as clearer images of the potential impact were presented to the community and as the residents' concern rose, the Rockridge Community Planning Council changes its chairman and its organizational structure.

Ted Burton, the new chairman, issued a call for the neighbourhood "to get together and decide what it wants - then go down and ask for it" (Claremont Press, November 15, 1973). The RCPC had dropped its quest for a professionally prepared plan: planning was no longer to interfere. Subneighbourhood groups were organized to hold meetings and send representation to RCPC. This enabled residents to participate more freely, and support for RCPC increased as it provided additional opportunity for the expression of the residential community's interests. Neighbourhood workshops were held in 1974 to determine the kind of plan the residents of each area wanted. The "alternatives for Rockridge" were presented at a public meeting and the visual consequences of locating high density buildings next to single-family bungalows were illustrated by means of a slide show. Both the concern and the community organization through which to channel was evolving.

The RCPC undertook to coordinate the planning process; by March 1974 it had articulated its goals. "RCPC," stated Ted Burton, "is not out to stop development -- but only to insure that all new development is beneficial to our community ... Proper zoning could further enhance property values in residential areas by assuring home-buyers that the neighbourhood they are buying into will not undergo drastic changes."[13] Present zoning allows,

> ...small, ticky-tacky apartments in the midst of good single-family houses, ... high-rise apartments next to single-family homes, ... open uses on College Avenue, such MacDonalds hamburger stands, used car lots, gas stations, etc. ... Existing zoning ... encourages speculators to buy houses and let them run down in anticipation that they will be allowed to develop apartments in their place.[14]

If the area were rezoned to eliminate undesired impacts, property values were not expected to drop nor taxes to rise. Down-zoning, it was argued, may even cause a reduction in property taxes; under high zoning it was thought that tax assessments would be based on potential use. In the April, 1974 "Rockridge Community Newsletter", residents are warned:

> If Rockridge were fully developed under existing zoning, our population would easily double. We do not have the traffic capacity, parks, and other community services to handle the increased population ... Signs of the BART impact can already be seen. Peeling paint, leaky roofs, sagging porches give evidence that some absentee landlords are letting their properties run down, assuming they will be allowed to build new apartments and cash in on BART impact.[15]

The impact presented to the Rockridge residents was identical to that which was expected by the URES respondents living in the station vicinity (Chapter 3, Table 5, p. 49). Street traffic increases, apartment building, parking problems, less open space, high-rise construction, undesirables moving in, tax increases, area to go downhill are all the expectations of the respondents who lived near BART before RCPC boradened its political base and became responsive to the residents' interests. It is fair to say that RCPC is reflecting the expected impact which characterized the respondents living near the station. In June, "Taco Bell" announced its intention to build a car-oriented dining facility that was considered litter-producing and not in keeping with the character of neighbouring shops. RCPC, backed by several hundred residents, petitioned the Oakland City Council for a 3-month moratorium on new construction. The community organizations had responded perfectly to the crisis situation. Felix Chialvo, long-time representative for North Oakland, opened the Council debate by reading a letter from Taco Bell saying that the proposal was withdrawn. He suggested that the moratorium issue, now moot, should be dropped from the agenda. Representatives from RCPC argued that the land-use planning process was now underway, that they did not wish to face a series of crises, and that the 3-month suspension would enable them to come up with a responsible plan for Rockridge. The president of the College Avenue Merchants' Association, speaking on behalf of the "officers and directors" of the organization, found the proposed ordinance "totally unacceptable": it "would create a tax payer hardship as well as kill any development, ... hurt any person seriously contemplating renovations or new residential construction." The delay would preclude the use of the summer months for construction and thereby raise its cost. The "Lucky's" store situation of 1966 might have been repeated had John Chalic, a College Avenue merchant, not presented a petition signed by 60 College Avenue merchants who favoured the moratorium. Support for the Merchants' Association's spokesman was eroded.

City Council, perceiving the near unanimity of support for the proposed ordinance and having informed itself that no one had announced plans to build anything in Rockridge in the near future, voted affirmatively and the moratorium came into effect. The Rockridge residents, co-ordinated by RCPC, had won not only the first land-use battle, but also gained recognition of their planning process by the City Council. In Oakland, moratoria are granted only in cases where planning studies are being carried out and new construction could destroy the planning process. The "Taco Bell" problem had been handled at the grass roots. The residents had won: local power could effect changes.

The Rockridge Land-Use Plan:

Zoning workshops were set up throughout Rockridge. Merchants and RCPC officials started discussions and resolved to unite and evolve a compromise plan. For the most part, residents wanted the lowest zoning possible, and controls on the scale of commercial development along College Avenue. Merchants saw growth as inevitable, realized that BART would increase demand for commercial space, but agreed with development controls and sought to "preserve the integrity of the residential community." A plan showing reduced zoning across all of Rockridge was presented to the Oakland city planners. High density areas would be rezoned to "medium-high" density, with a 3-storey height limit and a requirement that projects be submitted for design review. The medium density areas would be rezoned to "one-family" or "garden apartment" zones. A limit on the depth of commercial uses along College Avenue was called for, and a maximum set on shop size and building length. Conditional use permits would be required for banks and real estate offices to locate on the ground floor, and for car-oriented services. Sign control would be established on College Avenue and billboards would be phased out.

The Rockridge BART station opened on September 16, 1974 and one month later a plan prepared by residents, merchants and city planners was presented publicly to the Oakland City Planning Commission. Steven Goldfarb, representing the merchants, argued that "we will be fostering development ... by making it clear to owners what they could do with their property in the commercial area." Some residents reacting to the "Alternatives for Rockridge" report angrily suggested that no options had been presented save the one offering to preserve the area as it was. One resident compared the outcome of the potential BART impact with that of a possible earthquake along the Hayward fault.

A few people spoke against the plan. Ken Natkin adopted a regional perspective on the issue. The residents, he felt, were being selfish in wanting to preserve the status quo. He asked the Commission to review the issues in a broader context but his plea was received by a hostile audience. A few people preferred the development potential: "Modern planning," argued one, "does not allow single-family houses to occupy large lots in a crowded city." Another felt that the proposed zoning was "too far a step down ... It does not take into consideration the people who must depend on multiple residences for a place to live." A Rockridge home-owner of 26 years felt that "Rockridge used to be a little town - but it's been going downhill. We don't want to keep it as it is." Most of the 300 residents supported the down-zoning proposal and let their animosity towards opponents be known.

As the fear of high-rises spread, opposition to the down-zoning plan by the realtors, who depended on the community for their business, became less vocal. Despite RCPC's continuing claims that they did not oppose development per se, their proposals were being interpreted by development-minded people as being aimed at preventing change. Even the staff of the City Planning Department tended to dismiss the social welfare arguments presented by interested owners against down-zoning because they were thought to be motivated by the quest for profit.

In November, some two weeks after the public meeting, the Oakland City Planning Department called on City Council to accept the proposed down-zoning plan. In their report, the planners recognized that:

> The City's Policy Plan recommends locating higher density residential uses in areas of high accessibility, which would include areas near BART station.
>
> However, staff also realize that College Avenue is a severely congested street, which would become further congested if large increases in density were allowed.
>
> Moreover, environmental improvements, such as parks and recreation facilities, are needed to serve the

> area's existing population, as well as any large amounts of population brought into the area by new construction.[16]

The only strong opposition came from lawyers representing the billboard industry, which felt that it, College Avenue merchants "of a sort", was the only industry being zoned out of existence and that "proper notification" of the public hearing had not been given. The Planning Commission remained unsympathetic and voted unanimously to accept the City Planning Department's plan.

This plan, which took residents, merchants and city planners several months to prepare, was presented to the City Council on December 10. It was presented as a compromise plan which, stressed Ted Burton of RCPC, "to the maximum extent possible resolves the concerns and desires of the vast majority of Rockridge." Indeed, the severe restrictions on commercial growth proposed by different sub-neighbourhood groups had been adjusted in favour of the merchants. Earlier requests for a strict "one-family" residential zone were modified to permit a maximum of two-unit dwellings on lots where a use permit had been granted. A slightly larger amount of medium-high density zoning was offered than had been requested. The plan was presented as one which would "enhance the community" while yielding a density envelope within which the 1,200 new units forecast by the Gruen report could be built.

A few opponents to the land-use plan protested that the prescribed density was too low, that it would preclude taking advantage of the BART station, and that they had not had an opportunity to participate in drafting the neighbourhood plan. Proponents blasted these people for being silent so long and for coming up with their suggestions after months of joint planning effort. Again the strongest opposition came from representatives of the billboard industry, and from a labour union official who argued that jobs would be lost if the twenty-three placards on College Avenue were removed. The plan was accepted by a near unanimous vote after Felix Chialvo's suggestion that the 3-year limit on billboard removal could be reconsidered at some future date. Mayor Reading opposed the plan saying he could not possibly vote for something which could result in the loss of even one job in the city, and which failed to allow for high-rise development near the BART station.

Conclusions:

Studies on Rockridge affected the residents' perception of their situation. BART, the experts told them, could bring big changes to their neighbourhood. Proposals such as Leung's apartment building and "Taco Bell's" scheme for a Mexican food outlet, were therefore seen in the context of BART and were no longer isolated examples, but the beginning of a new trend. As such, they had to be opposed in principle and a comprehensive land-use plan was required. Rockridge was fortunate in having among its residents many competent planners, engineers and lawyers.

The down-zoning of Rockridge suggests that the area will enjoy less development potential than before. To the extent that BART precipitated the conflict which was resolved by the down-zoning plan, BART's impact was effectively a reduction in the area's development potential: an impact which was in part mediated by the Oakland city planners whose impact statements warned the residents of big changes.

Whether or not the Rockridge Community Planning Council maintains its vigil and continues its activity to upgrade Rockridge remains to be seen. To the extent that it does and is successful, the BART impact will indeed be one that enhances the community.

We can make several observations regarding the impact statements and the city planners' approach to the problem. Firstly, none of the impact statements considered explicitly the regional perspective. The so-called "social benefits and costs", from a region-wide viewpoint, were not revealed. Neither were the possible local side-effects. Secondly, the fact that the development potential would most likely be accompanied by competition for land was not revealed. Had people thought that the development potential would have increased the value of their property and thereby their wealth, their view of high-rises may not have been so negative. Although this is speculation, it indicates that there may have been a potential for the impact statements to affect the residents' mood in more ways than one.

If an impact statement's purpose is to identify the as yet unknown side- and after- effects of alternative plans, then the Rockridge impact analysis is a failure. The planners' activities did not rationalize the planning process. Before 1970, the city planners were the facilitators for potential developers. After 1970, they appear to have realized that the dual goals of having high density spines along BART and having residents involved in the decision-making process were incompatible. The city planners appear to have shifted from one leg to the other without really changing their style of approach to the issues. In the seventies, the planners became the facilitators for citizen groups. The broader issues of the BART impact were not raised in the sixties, as city officials advocated development, and were not raised in the seventies, as the planners started to work with citizen group representatives. Except for Ken Natkin's heroic attempt to invoke the regional perspective to a hostile audience, the discussion throughout the public debates and in the impact statements never went beyond Rockridge. This is not to assume that the benefits of regional perspective would have outweighed the costs of developing Rockridge. It is possible that a "quick and dirty" regional evaluation would only have made the conflict harder to resolve. It may have sparked a more emotional response from the pro-development forces. It may, in fact, not have been needed in this situation.

A comprehensive impact statement would most likely have focussed on the social and economic impacts; but, to be useful, these should be placed in the political context of Rockridge and Oakland. The residents, quite rightly, had little faith in the City Council's decision-making. They had had a six-lane highway thrust across their neighbourhood in the most underhanded way - the Chamber of Commerce, it was reported, knew about the freeway location before the residents, who had been pressing for such information throughout the planning of the freeway. The "Lucky's" supermarket decision was clearly a ridiculous one when seen from a regional perspective. A car-oriented supermarket next to a rapid transit station is not the best use of land. The city councillors' voting procedure in the case of Lucky's angered the residents. The move by Felix Chialvo, the man who was supposed to represent the Rockridge community's interests in City Council, which resulted in the moratorium issue being dropped, is just another example of the residents' inability to have their views represented on the City Council.

We can see that Rockridge residents had little basis for trusting Oakland City Council to make a decision based on a generous view of social welfare. In such a political context, it is unlikely that the regional perspective would have retrenched the residents' position. The atmosphere was not one in which rational decision-making was possible. The situation precluded a give-and-take attitude. The residents had no assurance that any compromise plan they may have agreed on would not be the beginning of the end of their neighbourhood.

When placed in a political perspective, the planning strategy adopted by the city planners and the citizen groups was indeed a rational one.

PART TWO: THE MARKET'S RESPONSE

PART TWO

THE MARKET'S RESPONSE

Introduction:

Large changes were predicted for the Rockridge area. Large changes were expected. Investors were thought to be attracted to Rockridge because it was an attractive area and because BART increased its accessibility to the region's centers of interest. The forecasts were based first on a review of what happened in the areas of transit stations built in other large cities. It was expected in 1969 that the response would be slower in auto-oriented California, but that the trajectory would be the same. In 1972, the Gruen & Gruen Associates report mentions that no major changes in land-ownership appeared to have occurred to date, but that some assembly was observed in the areas near to the station. The local realtors and the Alameda County appraisers that I talked to had not observed any increase in prices or sales activity as a result of BART.

Although the Rockridge controversy has been resolved for the time being, some questions remain unanswered. Did the downzoning decision stop an imminent threat to the neighbourhood? Was the belief in the great development potential held only by the city planners and the local realtors, or was this belief shared by housing suppliers to an extent sufficient to cause an increase in the competition for land located near the station and thereby cause its price to increase? Local residents appeared to have been unanimous in their opposition to the BART induced development potential because they feared its environmental consequences. The trade-off between a "destroyed neighbourhood" and the windfalls due to the price increases usually associated with an emerging development potential were not explicitly made. Why? Did property prices not rise and therefore did the BART development potential not offer any benefits to the present home owners? Did the publicized development potential, by creating conflict and uncertainty regarding the future character and zoning of the neighbourhood, reduce the market demand for houses located near the station and thereby reduce their sales price?

In this part, we will examine the market's response to BART and the conflict situation. We will do so by discussing theory in Chapter 5, and by developing a statistical model in Chapter 6 and describing the findings in Chapter 7.

CHAPTER 5

THEORY

This chapter discusses the market's response to the access improvement from a theoretical viewpoint. We will show what forces are created by an access improvement and how the changes in the cost of commuting and the price of houses affect different groups of people. We will start with a model which rests on many assumptions but yields definite conclusions. The assumptions will be removed, one by one, and models will become more representative of reality but will yield less precise conclusions.

The purpose of this chapter is to set the theoretical basis for specifying an econometric model that will be developed in the next chapter. The purpose is also to show what kind of redistribution consequences we may expect to be created by a rapid transit station's land-use impact.

Initial Assumptions:

An eclectic approach is taken in this chapter. The Muth[1] model of household equilibrium will be used to explain how different groups of households are likely to react to new access and price gradients. We will consider the households who stay at the old location for a period of the time after the access improvement is announced. We assume that some changes in the demand for land in this area have occurred. We assume that the households were in equilibrium when the announcement was made. Households in equilibrium at the time of the access improvement have strictly convex utility functions and all seek to attain the maximum level of satisfaction that their fixed incomes and tastes permit. The city is assumed to be monocentric and lies on an undifferentiated uniform plain. All households value access to the center, The number of trips they make to the center is not a function of the cost of the trip. Housing is a malleable good. Relocation costs are ignored. Everyone has perfect knowledge and each household's utility maps are independent of those of other households. Most of the latter assumptions will be relaxed in the last part of this chapter.

The Muth Model:

Richard Muth explains the effect that changes in income, housing prices and commuter costs have on the households' equilibrium location. Muth's household maximizes:

1. $L \equiv U(x,q) + \lambda[y - T(k,y) - p(k)\cdot q - x]$

x	is the composite good with a price set equal to 1.
q	is the quantity of housing purchased by the household.
$p(k)$	is the price of a unit of housing at distance k from the city center.
$T(k,y)$	is the cost commuting to the city center.
k	is the distance from the city center.
y	is the household's income.
$U(x,q)$	is the household's utility function for the two goods.

Assuming that the marginal cost of commuting does not change with distance from the center city and that the household's number of trips 'a' to the center is not a function of the cost of the trips; then the first order conditions are:

2.1 $L_\lambda = y - a \cdot k \cdot T_k - p(k) \cdot q - x = 0$

2.2 $L_x = U_x - \lambda = 0$

2.3 $L_q = U_q - \lambda \cdot p(k) = 0$

2.4 $L_k = -\lambda(p_k \cdot q + a \cdot T_k) = 0$

The last condition for an equilibrium state requires that the savings in the amount paid for housing a unit distance further away must equal the cost of commuting the extra distance, i.e.: $p_k q = -aT_k$.

In differential form the conditions are:

3.1 $dL_\lambda = dy - a \cdot k \cdot dT_k - a \cdot T_k \cdot dk - p(k) \cdot dq - q \cdot dp(k) - dx = 0$

3.2 $dL_x = U_{xx} dx + U_{xq} dq - d\lambda = 0$

3.3 $dL_q = U_{qx} dx + U_{qq} dq - p(k) \cdot d\lambda - \lambda \cdot dp(k) = 0$

3.4 $dL_k = -q \cdot dp_k - p_k \cdot dq - dT_k = 0$

Muth shows that the change in the price of housing dp(k) has a component describing the exogenous change in price dP at the household's old location, and one $dp_k dk$ describing the change induced by the household's moving in response to the price change. Similarly, a change in the price gradient dp_k is expressed as the sum of an exogenous change at the household's old location, dP_k, and one due to the relocation, $P_{kk} dk$. After making the appropriate substitutions, the differentiated first order conditions can be expressed in the matrix form:

4.
$$\begin{pmatrix} 0 & -1 & -P & 0 \\ -1 & U_{xx} & U_{xq} & 0 \\ -P & U_{qx} & U_{qq} & -\lambda p_k \\ 0 & 0 & -P_k & -qP_{kk} \end{pmatrix} \cdot \begin{pmatrix} d\lambda \\ dx \\ dq \\ dk \end{pmatrix} = \begin{pmatrix} akdT_k + qdP - dy \\ 0 \\ \lambda\, dP \\ qdP_k + adT_k \end{pmatrix}$$

Richard Muth, by analyzing the last equation which describes the condition for locational equilibrium, derives the following conclusions regarding the partial effect of a change in the marginal cost of commuting and of a change in the level of housing prices:

5.1 $$\frac{\partial k}{\partial T_k^*} = (\rho T_k E_{q,y;R} + 1) \div D \leq 0$$

5.2 $$\frac{\partial k}{\partial P_0} = \frac{-P_0}{P} (E_{q,p;C} - \rho_q E_{q,y;R}) \div D \leq 0$$

and:

$$D = [E_{q,p;C} (\frac{P_k}{P}) + \frac{P_{kk}}{P_k}] \leq 0$$

where:

$*$ designates the natural logarithm of the variable.

$E_{q,y;R}$ is the real-income elasticity of demand for housing.

$E_{q,p;C}$ is the real-income compensated price elasticity of housing demand.

ρT_k is the proportion of income the household spends on the variable part of its commute costs.

ρ_q is the proportion of income the household spends on housing.

P_o is the price level of housing at the city center.

P is the price paid by the household.

The first equation describes the partial effect, on the household's equilibrium, of a change in the marginal cost of commuting. Since the numerator is positive and the denominator is shown to be negative, a decrease in commute costs will cause the household to move further away from the city center. The extent that a household's equilibrium is offset depends on its price and real-income elasticities of demand for housing and on the proportion of real-income that is spent on commuting. As expected, households spending a small proportion of their income on commuting will not be much affected by a change in its cost. The more elastic is their demand schedule for housing, the further is the move. Across people with the same income and travel patterns, those located in the inner city spend a small proportion of their income on commute costs and will therefore not tend to move as far as do the suburbanites in response to a uniform access improvement.

As people start to move outward, the price of residential land and improvements drops in the inner city and increases further out. It is therefore reasonable to expect that the shift in the location of demand for housing causes the rotation in the price gradient described by Alonso and others.

Equation 5.2 gives Muth's conclusion regarding the partial effect of a change in the level of housing prices. The terms within the brackets describe the substitution and the income effect of the price change. Since the price elasticity of demand is negative, the expression within the brackets is negative and it follows therefore that a price increase causes households to locate closer to the city center. The larger is the proportion of income spent on the housing purchase, the greater is the effect of a price change on the household's equilibrium location. We could conclude that low income people, who spend a larger proportion of their income on housing than do people with higher incomes, will have their locational equilibrium most upset by a change in the level of housing prices.

When describing the partial effect of the reduction in commute costs, Muth's household moves along the old price structure. When considering the effect of a change in the price level, all other variables are held constant. The model, however, can also help answer questions regarding the impact of simultaneous changes in travel cost, prices and price gradients across different groups of households.

Consider a situation in which housing prices start to adjust after the intention to improve access to the CBD has been announced. Investors, anticipating price changes, may have shifted the location of their demand and thereby have affected the price of housing at different locations. Consider the situation of households which have stayed at the same place since the announcement and are evaluating their position at a point in time after the improvement is affected. Consider the case in which the household finds that it is in an equilibrium location and therefore chooses not to move. The locational effects of the changed parameters have cancelled each other out, i.e.:

$$6. \qquad \frac{DK}{\partial T_k} = \frac{\partial K}{\partial T_k} + \frac{\partial K}{\partial P} \gamma + \frac{\partial K}{\partial P_k} \gamma_k = 0$$

where:

$\gamma = \left.\frac{\partial P}{\partial T_k}\right|_k$ is a change in the price of housing at distance k. The change is due to the market's response to the access improvement and it is related in some manner to the change in the price gradient. Prices may either increase or decrease.

$\gamma_k = \left.\frac{-\partial(-P_k)}{\partial T_k}\right|_k$ is the change in the gradient at k that is associated with an incremental change in the marginal cost of commuting. It is expected to have a negative value.

By inspecting equation 2. we can see that only the P_k and P_{kk} terms on the left hand side have changed. Rather than describing the slope and the curvature of the old price gradient, they must be changed to describe the new one, $P_k^{\cdot}$ and $P_{kk}^{\cdot}$. To describe the impact changes in commute cost and its associated price effects, we simply divide both sides of equation 4 by dT_k, make the appropriate substitutions, and use Cramer's rule to solve for $\partial K/\partial T_k$:

$$7. \qquad \frac{\partial K}{\partial T_k} = \frac{1}{|J|}\,[(ak + q\gamma)P_k\cdot|H_1| - \lambda\gamma P_k\cdot + (q\gamma_k + a)|H_2|]$$

where:

$$|H_1| = \begin{vmatrix} -1 & U_{xx} \\ -p & U_{xq} \end{vmatrix}$$

$$|H_2| = \begin{vmatrix} 0 & -1 & -P \\ -1 & U_{xx} & U_{qx} \\ -P & U_{qx} & U_{qq} \end{vmatrix}$$

Since the Jacobean in equation 5 has the same value as the boardered Hessian and since we know that the household is at a utility maximizing position, we know that the determinant $|J|$ is positive. By inspecting the conditions which cause the household to derive a maximum utility from its consumption of housing and the composite good once its location is fixed (ie. maximizing $U(x,q)$ subject to $\lambda(Y_R - pq - x)$, where y_R is real income net of commute costs), we recognize that the ratio $-|H_1| \div |H_2|$ is the partial derivative $\partial q/\partial y_R$. The ratio $-\lambda \div |H_2|$ is $(\partial q/\partial p)_C$, the substitution effect due to a change in the price of housing. For equilibrium to prevail $P_{kk}\cdot$ must be positive,[2] $|J|$ is positive and therefore $|H_2|$ is negative:

$$|J| = -q\dot{P}_{kk}\,|H_2| - \lambda(P_k\cdot)^2 \geqq 0$$

$$|H_2| = [|J| + \lambda(P_k\cdot)^2] \div (-1)q\dot{P}_{kk} \leqq 0$$

Dividing equation 7 by $-q\dot{P}_k|H_2|$, taking the natural logarithm of the variables T_k, γ, γ_k, and making the appropriate substitutions, yields results similar to those obtained by combining Muth's conclusions:

8. $$\frac{\partial K}{\partial T_k^*} = [(\rho T_k\ E_{q,y;R} + 1) - \gamma^*(E_{q,p;C} - \rho q\ E_{q,y;R}) + (1 + \gamma_k^*/T_k) \div (1 - \gamma_k^*/T_k)] \div D\cdot$$

where:

$$D\cdot = |J| \div (-qP_k^{\cdot}|H_2|) \leqq 0$$

$$\gamma^* = \partial P^*/\partial T_k^* = (T_k/P)\ \partial P/\partial T_k$$

$$\gamma_k^* = \partial(-P_k)^*/\partial T_k = (T_k/-P_k)\ \ \partial(-P_k)/\partial T_k$$

The first term in the numerator of equation 8 describes the effect of the change in commute costs. Since the denominator is negative, the change induced by the direct impact of reduced travel costs tends to move households further from the city center. As before the extent of the pressure is determined by the extent to which the household relies on commuting to the city center and its wage and non-wage income.

The second term describes the effect of the change in housing prices and its direction depends on γ^*, the proportion of change in housing prices accompanying a one percent change in the marginal cost of commuting. In city areas where the access improvement lowers price levels, the price effect will induce people to seek more distant locations. A rise in prices will work against the access improvement and tend to reduce people's propensity to relocate. If the prices change to counter the disequilibriating effect of the improved transportation network, then the slope of the price gradient must change more in the inner city than it does in the outlying region: the access improvement tends to flatten the price gradient and reduce its curvature.

The last term in the numerator describes the effect of the change in the slope of the price gradient. Since γ_k^* is positive, the flattening of the gradient will reduce the household's propensity to move outward.

In the inner city this change in the price gradient is the only factor countering the out-migration caused by the reduction in commute costs.

The household's characteristics enter only in the first two terms of the equation. In the inner city where the price change works with the access change to pull people outward, all households are equally affected by the change in the slope of the price gradient but they differ in their reaction to the forces which pull them outward. Households spending a smaller proportion of their income on commuting costs and on housing will tend to stay at their old location while others move outward. Families, with the same income but with more children, spend a larger proportion of their income on housing and would benefit more by moving away from the city center than would child-free households. The wealthier people spending a smaller portion of their income on housing would have to be offered a large reduction in commute costs to induce them to move. Because the income effect of the access improvement is greatest for households depending primarily on wage-income, the wage earners will be affected before others. Retired people associating a low cost dollar to time spent travelling to the city center may experience no inducement to move as a result of improved commute facilities.

The greatest difference in the impact of an access improvement and its associated price changes is between renter and home-owner. Muth does not distinguish between these groups. The home-owner is considered to be paying implicitly to himself the same amount that a renter would pay to a landlord for similar accommodation. The home-owner derives income not only from his wage, leisure and non-real estate investments, but also from the ownership of the house. If housing prices increase, the amount the household pays to itself for housing increases, and therefore so does its income. Equation 8, therefore, describes only the case of the renter who perceives an income effect due to the price change. The real income effect of price changes must be deleted from the second expression in the numerator when describing the effect price changes have on home-owners. The deletion of the term is equivalent to rewriting the budget constraint in equation 2 to include a term E accounting for the ammortized value of the equity the household has in its housing, i.e.:

9. $L \equiv U(x,q) - \lambda(y + E - p(k)q - T(k,y) - x)$

Recognizing that a change in qdP in equation 4 will bring about an equal in magnitude but opposite in sign change in $-dE$, leads to the removal of the term describing the income effect of exogenous changes in housing prices at the old location.

The deletion of the income effect term leads to the conclusion that inner city home-owners have a lower propensity to move than do renters after prices have dropped. The price adjustment in the inner city favours the renter by increasing their rent-income. We can visualize a situation in which inner city home-owners are not induced to move, while renters from the inner city seek more distant locations.

Muth's model has been used to explain a situation in which the home-owners of an area seek to stay while the latent demand for rental accommodation in that area can increase because of the pressure exerted by the renters living closer to the center. Our image of the market causing a ripple effect as the spatial structure adjusts to form the new equilibrium pattern, should be adjusted to accommodate a few cascades.

The Effect of a Discrete Access Improvement:

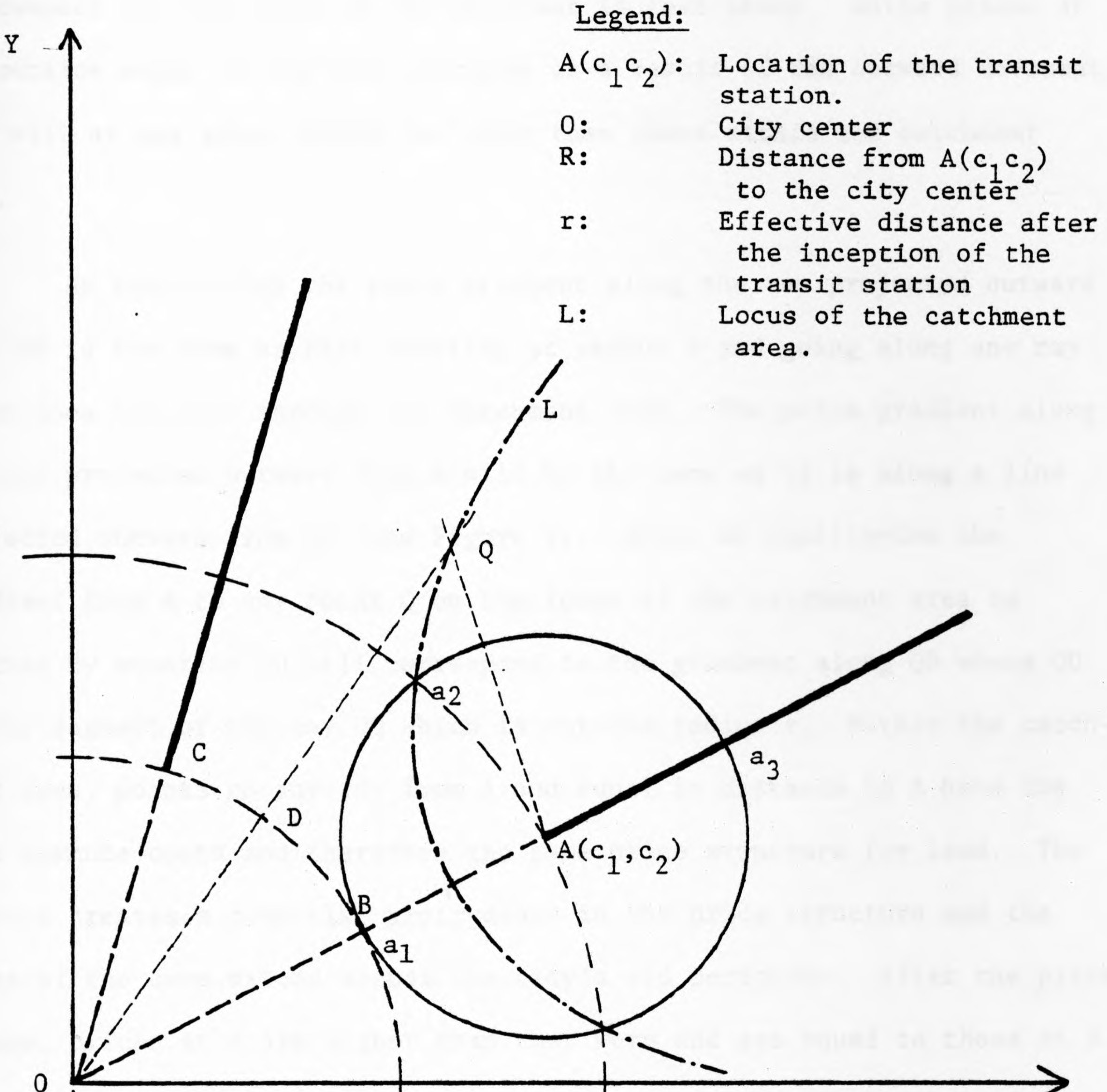
Consider a city that has a transit station built at location A, at a distance R from the center located at 0 (see Figure 1). Assume that the household would use the same mode travelling to the station as it did going to the city center, i.e., that the marginal cost of commuting to the station is the same as the marginal cost of travelling to the CBD. As a result of the station located at A, total cost of travelling from A to the city center by the transit system is reduced and made equal to the total cost travelling from some point B by the old mode of transport. If B is located at a distance r from the center, then all points on the arc a_1, a_2, a_3, in Figure 1 become as accessible to the city center as A used to be. The circle $a_1a_2a_3$ has a radius of R-r. The boundary of the station's eventual catchment area is defined by the locus of points whose direct distance to the center is equal to r plus its distance to the station A. If we put the city in a cartesian grid with axis X and Y and locate A at point c_1c_2 then the following equation will give the locus:

$$10. \quad L \equiv r + \sqrt{(x - c_1)^2 + (y - c_2)^2} \quad - \quad \sqrt{x^2 - y^2} \quad = 0$$

The fixed cost of commuting for all households living within the catchment area has reduced while elsewhere the costs of commuting remain unchanged. The fixed cost of commuting has decreased equally for all people living on that segment of ray OA that is projected beyond point A and away from the city center. Given the old price structure, all households living outside the circle, going through B and defined by radius r from the city center, could be made better off by moving closer to the station. The station A changes the housing demand at all urban locations outside radius r. Since people from all other city areas seek locations with access to

FIGURE 1

A Transit Station's Impact on Site Rents


Legend:
A(c1c2): Location of the transit station.
O: City center
R: Distance from A(c1c2) to the city center
r: Effective distance after the inception of the transit station
L: Locus of the catchment area.
Y
X
O
L
Q
a2
a3
C
D
A(c1,c2)
B
a1
r
R

the station, the price of housing outside the catchment area starts to decrease while that within the catchment area increases. At equilibrium, the price gradient outside the catchment area is uniform, price levels at the city center are slightly lower than they were before the access improvement and the slope of the gradient is less steep. While prices at the outside edges of the city increase as a result of the outward movement, they will at any given radius be lower than those within the catchment area.

At equilibrium the price gradient along the ray projected outward from OA is the same as that starting at radius r and going along any ray which does not pass through the catchment area. The price gradient along the ray projected outward from A will be the same as it is along a line projected outward from OC (see Figure 1). Also, at equilibrium the gradient from A to any point Q on the locus of the catchment area as defined by equation 10 will correspond to the gradient along QD where QD is the segment of the ray OQ which is outside radius r. Within the catchment area, points on any ray from A and equal in distance to A have the same commute costs and therefore the same price structure for land. The station creates a cone-like protrudence in the price structure and the edges of the cone extend across the city's old periphery. After the price change, prices at A are higher than they were and are equal to those at B.*

---

*We have assumed that the households travel to the station by the same mode they would have travelled to the city center. The marginal cost of going to the station is the same as that experienced by people not taking the rapid transit system. If people decided to walk to the station, then the marginal cost of travelling to it would be much greater and the slope of the resulting price gradient much steeper. The cone could exhibit a curvature similar to that in the housing price gradient immediately next to the CBD. We do not dwell on the effects of a change in mode and the cost reductions due to not having to park a car. It follows _a fortiori_

Equation 4 can now be used to describe the necessary, but not sufficient, conditions for a household living at A to remain in equilibrium after the access improvement occurs and price adjustments have taken place. Dividing by dT_0, the change in the cost of a trip to the city center, realizing that dy/dT_0 is equal to 1 along the projection of ray 0A, and redefining γ and γ_k to describe the housing price changes attributable to a change in fixed costs, yields an expression similar to that described by equation 8. For home-owners it is:

$$11. \quad \frac{\partial K}{\partial T_o^*} = [\rho T_0 E_{q,y;R} - \gamma^* E_{q,p;C} + (1 + \gamma_k^*/T_k) \div (1 - \gamma_k^*/T_k)] \div D^{\bullet}$$

The 1 from the term describing the direct effects of the access improvement drops out and the parameter ρT_k is replaced by the proportion of income households spend travelling distance R.

As before, the first term in the numerator describes the effect on the household's equilibrium location of savings in the fixed cost of commuting. Since the real-income elasticity of demand is positive, this term is positive. The second term describes the effect of the price adjustment. Since prices rise, γ^* is positive. Since the real-income compensated price elasticity for housing is negative and the sign in front of the term is also negative, the price adjustment has an effect on the household's equilibrium location which contributes to that created by the direct change in commute costs. Since $D^{\bullet}$ is negative, a decrease in commute costs will induce households to seek locations further away from the city center than they would have had no change occurred in commute costs and housing prices.

---

that the price would be curved, should the marginal cost of travelling to the station be greater than that incurred when travelling to the CBD by modes other than rapid transit.

The last terms describes the effect of the change in the slope of the price gradient. When discussing the uniform access improvement, we found that a decrease in the slope tended to counteract the outward pull. We know that the slope at A has increased and therefore this term as well contributes to the households propensity to move away from the station. Even if the households exhibited completely inelastic demand curves for housing (i.e., $E_{q,y;R} = E_{q,p;C} = 0$), then the slope change would pull the households outward. There is no term in the equation that would make it attractive for some households, living at A before the access improvement, to stay there. Everyone who once lived at A is made better off by moving away once the prices, price gradients and transport costs have changed.

Location A has become attractive to all households living in the ring rR. Once price adjustment starts, only the people most valuing the access attributes, those living at radius r from the city center, will move to the station area. If the station makes a big difference in commute costs, then it attracts people with housing preferences very different from those who used to live in the area. When discussing the effects of a uniform access change, it was shown that a general price decrease affects the renters' propensity to move while it leaves unaffected that of the home owners'. Before prices start to change both renters and owners living in the inner city seek locations close to the rapid transit station. As prices elsewhere adjust downward, however, the renters living within radius r will start to show a greater propensity for outward movement than do the home owners. Once the price adjustments are felt, the latent demand by renters for locations near the transit station is likely to increase relative to that by home owners. The tenure structure of the station area is expected to change.

Because the people who were living at A did not buy B-type access and pay B-prices for houses before the improvement occurred, they will not buy it afterward. Renters will leave after the housing prices have wiped out the savings due to the access improvement. Because housing prices outside the catchment area have dropped and the price gradient has flattened, both renters and home-owners previously living at A can locate outside the catchment area and be better off than they would have been had the station not been built. Home-owners living in the station area are made best off because they can move and take with them the capitalized value of the savings brought about by the station. Everyone, except the inner city landlords, is made better off by the access improvement.

The preceding conclusions rest on the assumption that the city is on a uniform, undifferentiated plain, that housing is a malleable good, that transactions are costless, that all goods are priced and that the households have perfect knowledge of the available options. The conclusions suggested that all the old households in the station area are induced to leave and all are made better off. The implications of relaxing these assumptions are presented next.

The Differentiated City:

Cities have natural areas with valued characteristics. The amount that people are willing to pay for a location is affected by the quality of the area and by their attachments to it. Unfortunately, the introduction of discreet neighbourhood characteristics makes it impossible, at this time, to continue with the rigorous style of analysis that was presented earlier in this chapter.

We can introduce the concept of neighbourhoods and suggest that many people would be willing to pay more to live there than they in fact do. This surplus value may be due to their valuation of the neighbourhood's characteristics or of the networks they have formed within the neighbourhood. Since owners cannot perfectly price discriminate and because some attachments do not develop until the household has stayed in an area, many households can reap surplus value in the sense that the household would be willing to pay more for their present housing, instead of moving out of their neighbourhood.

If the city is comprised of a number of areas in which residential land prices are set by the households with little attachment to the area that they live in then the access improvement will not directly induce the large shifts in population. The improvement changes the bid price curves of everyone who finds the area acceptable, induces people to move into the area, fill any vacancies that prevailed earlier and led landlords to increase prices. We may expect the landlords to to continue to increase prices until a new unacceptable vacancy level is reached. During the period of price increases the households valuing the access improvement and the unique attributes of the neighbourhood less than the price increase, leave the area. If owners are slower in lowering prices than they are in raising them, the leaving household will buy or rent housing at their next best location at the price which prevails there. All renters moving outward, except the initial marginal ones, move onto a higher bid-price curve and suffer a loss in welfare. Then more live in what was their next best option. The renters remaining in the area who are willing to pay the going price for the access improvement (and the neighbourhood attributes) can also experience a decrease in welfare. They now have the access attributes they did not choose to have before the improvement and they must pay a price close to what it would have been had they chosen the greater accessibility in the first place. We have shown that an access improvement and its associated price increase can, in a more realistic model, cause some people to be less well off than before. While the neighbourhood's characteristics do not change, the home-owners can remain at the old location, enjoy the access improvement and increase their wealth. The home-owner, unlike the renter, leaves only when a more desirable option presents itself. All home-owners in the station area gain so long as their valued neighbourhood attributes are not destroyed.

The Non-Malleable Housing Stock:

An inner city transit station will attract people living close to the city center. The more remarkable the station's impact on the access surface, the closer to the city center from which it will draw households and therefore the more different will their housing preferences be from those of the existing population. The latent demand for high density housing will increase. Conversion becomes profitable once the present value of the revenues less costs expected from new uses exceeds the net returns from the present improvements.

After a rapid transit station is built, the demand by households who plan to live in the existing structures increases as well as demand by investors and developers. The station makes the accessibility of the area acceptable to new households who are at first attracted by the relatively low housing prices. The incoming households will tend to buy the less land intense properties. The demand for the largest houses in the area may not be affected.

Competing with the households are the developers. The price this group is willing to pay depends on the uses to which the land can be profitably converted. To the developer the quality of existing improvements is of minor importance, only to the extent that it reflects the quality of the immediate area. If lot sizes are more or less the same, the developers would buy the lower quality houses and ignore the others. Demand for these should increase relative to the demand for the expensive houses. Should the access improvement be remarkable, then its associated price effect will distribute windfalls primarily across owners with low quality and with low land intense houses.

As a result of the development potential and the non-malleable nature of buildings, the price of the lower quality housing rises proportionally to that of the better buildings. Although it was shown earlier that home-owners increase their well being as a result of the transit station and its associated price changes, it is now clear that the price effect, due to the development potential, can benefit the lower income home-owners while leaving the more wealthy unaffected. With the release of the malleable housing assumption, it becomes possible for the induced development potential to leave unaffected the price of some houses.

The Effect of Externalities:

A technological externality can be said to occur when a user's enjoyment of one lot is affected by the land uses on other lots. Neighbourhood characteristics affect the welfare of its residents and, as mentioned earlier, can offer the user a valued attribute which he may not have to pay for. The transit station, by increasing competition for land in its vicinity, raises its price and reduces the resident's surplus value. The home-owner's welfare will remain unaffected by the price changes provided the characteristics of the neighbourhood do not change. As the potential for development grows, the quality of the neighbourhood as perceived by its residents is threatened. As development occurs and the neighbourhood starts to change the residents perceive a decline in the relative value of this location over their marginal one. The households who initially sell their property are compensated for the loss of their neighbourhood while those who remain may not be.

The higher quality houses, if they are bought, are bought last by developers. The owners of these houses are, therefore, the ones to experience the loss of the attractive neighbourhood characteristics without necessarily being compensated for the loss. Furthermore, if the external cost of the development perceived by the buyers of expensive houses is greater than their valuation of the savings in commute costs, then the sales price of these houses will drop. The houses will sell for less than they would have had the station not been built. In the extreme case, the value of all property in the area becomes the same; its value is determined by the opportunity to which the land can be put to. Home-owners are no longer guaranteed of an increase in their welfare. If losses occur, they are borne by the owners of the best quality housing, that is, by affluent households.

This argument can be nicely demonstrated by using Lawrence P. Schall's analyses of the effect externalities have on land value and on the value of improvements on it.[3] Schall defines land value V_L as the present value of the future stream of profits the owner of the land would reap by putting it to its best use. The value of land is the discounted difference between revenues received and the demolition, construction and maintenance costs incurred in successive periods. The total value of a property V_T is the discounted revenues net of costs that are received by the owner should he keep its present use. The value of the improvement on the property is the difference between the total value of the property and the land value, ie. $V_T = V_T - V_L$. If the site is not being put to its best use, then the value of the improvement is less than its replacement cost. If the value of the returns from the present improvement is less than the land value less demolition costs, then the owner will find conversion profitable. Conversely, the present improvement will be retained if the total value of the property is greater than the land value less the demolition cost, ie. when $V_T \geqq V_L - D$. Since $V_L = V_T - V_I$, the existing improvement will be kept if its value is greater than is the cost of demolition costs, ie. when $V_I \geqq - D$.

Schall continues the argument by saying that an external economy can change the value of the land as well as the total value of the property. If, however, the present land-use is no longer the best, the land value increases more than does the total value of the property and therefore the value of the improvement can be said to decrease. Since quality improvements must decrease in value more than other kinds before they are replaced, it follows that the least good houses are replaced first. While it is not profitable to replace the good quality structures, they remain on the market and are bought by households not developers. Since the external consequences of development will reduce the enjoyment of the single-family houses by their prospective occupants, the value of the improvement drops further.

It is possible, therefore, for the price gradient for good quality houses to drop near a new rapid transit station. As our assumptions are dropped, the expected market response to BART becomes less clear. We can still use the conclusion from using Muth's model to differentiate between owners and renters. If development generated externalities create a decline in the price of houses, then the owners perceive no in core effect that is associated with the price drop and are therefore less likely to have their equilibrium location changed than are renters.

The Effect of Transaction Costs and Property Taxes:

Realtors' fees and relocation costs place a wedge between seller and buyer. Households selling to reap windfalls and to move to a better housing option are of course totally compensated for the direct costs of the transaction as well as for the psychological costs of breaking with the community and their established social networks. For the home-owners whose welfare was shown earlier to be reduced by the external effects of development, the cost of transactions simply add to their burden at the time they leave. All renters pushed out by the price increases absorb the relocation costs while the new renters enticed by the development are adequately compensated.

Property taxes like the transaction costs, place a wedge between the seller and buyer. The tax burden, the part of the tax payment that appears to the buyer of land to yield no returns in the form of city services, is likely to be capitalized and borne by the seller. Like the transaction costs, the property tax increase as a result of price changes will reduce the extent to which home-owners are compensated for the potential loss of their neighbourhood. Unlike the transaction costs, the tax does not slow down the turnover rate. The increased taxes affect the home-owners in the same way that price increases affect the renter. Although the owner cannot escape the tax burden because it is capitalized, he may be forced to sell the property if he cannot afford the payment.

Retired people with low incomes but expensive houses would be hurt most by the tax increases.[*]

The Effect of Imperfect Knowledge:

While assuming a near perfect market it could be shown that no one was made worse off and that most benefit as a result of an access improvement. When some of the assumptions were dropped the exactness with which conclusions could be drawn was reduced and their nature was changed. The assumption of the undifferentiated plain, the malleable housing stock, the ability to price and compensate for environmental effects, the costless transaction and the tax free city could be relaxed and simple economic arguments could be used to describe how a transit station affects households living in an imperfect world. The same cannot be done with this last assumption. Indeed, it has been the perfect knowledge assumption that has kept this narrative intact: people know their options, they know what price they could sell for and what they would have to pay for housing elsewhere; they can associate price changes with access improvements and transit stations with their flow of real- and monetary-income, and much more, they know what the probable future options are; a household does not outbid a developer and pay the premium, exept to live in a quiet neighbourhood and be surprised when a highrise slab is proposed for their backyard. The perfect knowledge assumption has been very useful in eliminating emotional responses and their effect on the households' welfare.

---

[*] Should the city attempt to tax away the "unearned" increase in site rents by using the property tax instead of a capital gains tax, then the transit station would affect home-owners no better than it did the renters. A capital gains tax would reduce the "push" and have the same affect on the home-owner as do the transaction costs.

When dropping the other assumptions, substitute theory could be found. Realizing that a transit system affects the access surface in discrete places and leaves unaffected the marginal costs we could no longer specify where the household would move to. However, using arguments describing how utility maximizing households substitute goods and services helped determine that all households in the station area had a strong propensity to move away from the area. Since the city was undifferentiated and housing was malleable, all goods were priced and all prices adjusted in response to changes in demand. No household could be made worse off by the access improvement. Home-owners, by being able to capitalize on the improvement and not being forced out by the income effect, gained the most.

The effect of a differentiated city could be handled by treating neighbourhood quality as though it were a good which was sold by landowners who were not able to price discriminate. The introduction of surplus value made it possible for households to lose as a result of the increased competition for land. Since home-owners could not be pushed out by the income effect, only renters stood a chance of having their welfare reduced as a result of the new transit station.

When the malleable housing assumption was dropped, arguments regarding the financial feasibility of converting land use were introduced to show how prices increases were progressively distributed. The external consequences of development could reduce the enjoyment of the area by the remaining households and affect detrimentally the price of their property. It now became possible for the more affluent home-owners to experience a loss in welfare as a result of the access improvement. Transaction costs and taxes could be treated as wedges which aggravated the home-owners and which in the presence of external costs, increased the home-owners' potential losses and caused the price gradient to decrease in the station's vicinity.

When dropping the perfect knowledge assumption, we can no longer use a theory to hold our story together but must examine the specifics of the situation. This was already done in Chapter 3 of this paper where we showed that the residents who expected changes expected a decrease in the quality of the environment.

In 1972 a portion of the Rockridge residents expected BART and the induced development potential to destroy the neighbourhood as a place to live. With the RCPC 1973 and 1974 campaigns to spread information and to solicit reactions, it is likely that the expectations of change spread. While no BART related developments were occurring, people held images of a future state of affairs in which they would find hi-rise buildings in their neighbours' back yard.

The potential development was well publicized and it is possible that prospective buyers of houses near the station were wary and would have preferred a stabler area. Unless developers were competing for the station side lots, it is possible that the belief that they were, deterred home buyers. This expectation could decrease competition for houses located near the station and cause their price to drop.

Conclusions:

Our analysis has not led us to a definite conclusion as to the Rockridge BART station's impact on land prices. If the market place operates the way our static models suggest it does, then we may expect a price increase and a cone like protrusion around the station. The rent surface would be curved with its slope becoming steeper as we approach the station.

When we drop some of the near perfect market assumptions, reasons were found for expecting no change in the price of housing. A decrease in prices could also be explained. The conflict and the fear of future changes may have decreased people's desire to purchase houses near the station.

As a result of the theoretical discussion presented in this chapter, we cannot approach the empirical study of the market's response with a one-sided test of the null hypothesis suggesting that no change has occurred. We must consider the possibility of a relative increase or a decrease in housing prices. We must determine whether the BART impact caused market activity to intensify in the Rockridge area and whether prices rose as a result. If they did, then we may conclude that competition for the station's vicinity increased and that households or firms were seeking to take advantage of the access improvement. If prices decreased, then we conclude that the land-use conflict or the fear of future changes in the character of the neighborhood decreased competition and made people or firms wary of the location and value it less than the comparable areas further away from the turmoil.

Before starting with the statistical analysis, we determined whether or not trust companies were either encouraging or discouraging house purchases near BART stations. Several realtors and executives of trust companies were interviewed and no policy regarding the BART stations was found. Potential purchasers of houses located near the station had neither an easier nor harder time obtaining mortgages than did comparable purchasers of houses located further away from the station. The institutional argument, suggesting that money lenders affected mortgage availability as a result of the property's location with regard to the BART station, is not relevant in this case. The market's response to the BART station was unaffected by the mortgage suppliers. As a result, the econometric analysis to be presented will reveal the attitudes of the sellers and buyers of Rockridge houses. The analysis will show how these parties, not how the bankers, valued the BART system's impact on the community and on the region's access surface.

CHAPTER 6

METHOD

The questions addressed in this and the next chapter explore the Rockridge BART station's impact on the sales prices of single-family houses. Indirect access was gained to the Alameda County assessor's machine-readable files on single-family houses. This data will be used to estimate the station's impact on the price gradient. The null hypothesis, asserting that changes in the sales prices of comparable houses did not systematically vary with distance to the BART station will be tested against alternatives suggesting that the prices did change across space. The direction of the relative price change is not specified because we have no prior reason to believe that the net effect of the access change, the forecasts and the citizen group reaction on sales prices was positive or negative. A two-sided test of the null hypothesis is called for.

The Research Strategy:

Every model used in this study rests on the assertion that BART, should it have an impact on sales prices, will have one which decreases in magnitude with distance from the station. The ideal method of finding and measuring the impact would involve an experiment in which identical houses located in different areas of Rockridge are sold during one time period. Analysis of the observed price differences would tell us the amount the buyers were willing to pay for proximity to the BART station. Such an experiment is, of course, not possible and we must make use of data coming from market transactions occurring at different points in time and involving houses with different attributes. Therefore, an econometric model must be designed which controls for the attributes that affect the sales prices and which tend to change with distance from the BART station. Because all parts of the study area are almost equally accessible to the region's centers of interest by transportation modes other than BART, it is possible to posit the following unspecified model: the sales price P_i of a house i is some function of its distance to BART d_i, a set of housing attributes $\underline{Q}_i$, and an error term E_i, which accounts for the apparently random variation in sales prices and for all the other housing attributes which affect the sales prices but are not included in $\underline{Q}_i$:

$$1. \quad P_i = f(d_i, \underline{Q}_i, E_i; \beta, \underline{\alpha}) \qquad i = 1, \ldots, n$$

The parameters β and $\underline{\alpha}$ describe the structural relationship between the attributes and the sales price of Rockridge houses. In order to estimate the magnitude of these parameters by the method of Ordinary Least Squares (OLS), a general model must be specified and the variables in the final equations must be transformed to yield a linear equation:

$$2. \quad (P_i) = c + \beta(d_i) + \sum_{j=1}^{L} \alpha_j (Q_{ji}) + (E_i) \qquad i = 1, \ldots, n$$

where:

(P_i) is the sales price in dollars of house i or some mathematical transformation of this variable.

(d_i) is the linear walking distance of house i to the BART station or some specified transformation of the measure.

β is the parameter describing the magnitude of the true relationship between distance and price.

(Q_{ji}) is the j^{th} control variable describing a relevant housing attribute. All attributes which affect the sales prices and are correlated with the distance variable are relevant.

α_j is the parameter describing the relationship between attribute Q_j and the sales price.

(E_i) is the error term due to apparently random fluctuations in sales price, due to mistakes in the gathering or recording of data and due to variables omitted from the equation.

Should the variables in the set $\underline{Q}$ completely describe all the attributes people consider when buying a house, the partial derivatives of the sales price with respect to each of the variables would describe the implicit prices people have paid for each attribute. The set of derivatives would constitute the "hedonic price index" for the housing attributes.

The index, an abstract construct, would describe the relative value the market has placed on each attribute. It would show the relative amount people have implicitly paid to have an extra unit of each attribute. Since our goal is to find out how much people have paid for proximity to the BART station and since we do not particularly care to know how they valued the other housing attributes, the set of variables in $\underline{Q}$ need not be complete. We include variables on the housing characteristics which affect sales prices and which vary with distance to the station. The effect of the omitted variables will be accommodated by the error term and their omission will not cause us to óbtain "baised" estimates of the sought after parameter β.

If all the non-BART factors which are correlated with distance are included in the model, then the expected value of the OLS estimate of the distance parameter will describe the unique relationship between the price houses were sold for and their distance to the BART station. Because the control variables account for the price consequences of all the other relevant attributes, the finding of a non-zero distance parameter permits us to draw the inference that the presence of the BART station has had an effect on sales prices.

The accuracy of the estimated distance parameter depends not only on the extent to which other factors are controlled for but also on the exactness with which we can specify the true relationships among the factors, on our ability to transform the variables to yield a linear equation, and on the size and the quality of the available data base. Errors will be introduced as we attempt to construct a linear model by means of transformations and as proxy variables are introduced to account for relevant factors on which data is unavailable. Furthermore, the state of the art does not permit us to say with certainty that the manner in which a set of housing attributes relate to sales prices is such and such. We recognize, at the outset of this endeavor, that the tools which are to be used to identify and measure the Rockridge BART station's impact on sales prices are rather blunt.

While we expect the access improvement to increase the attractiveness of houses located near the station, we realize that the conflict resulting from the forecasts of potential changes in the neighbourhood may have deterred house-buyers. It is possible that no net price change has occurred. Discussions with local residents, realtors, and tax appraisors lead us to believe that the station, should it have caused a price change, has caused one that is most unremarkable. It appears that the null hypothesis is going to be hard to reject. I therefore propose to approach the Alameda County Tax Assessor's data with a set of plausible models and measurement techniques, rather than with a highly developed equation resting on a restrictive set of assumptions. This battering approach is acceptable given the present state of the art of measuring land use impacts. Professor Douglass Lee, Jr., has argued that there are really no a priori reasons to select any functional form as the "best predictor" of the system's impact on sales prices.[1] If there is no reason to select any one functional form, then surely there is reason to use and to explore the implications of several plausible functional forms.

If the null hypothesis cannot be rejected by using any of the reasonable approaches, then we conclude that either no impact has occurred or that the statistical tests were not sufficiently powerful to detect the impact. If the tests prove to lack power, then nothing can be done about it at this point in time because the data used in this study come from observations on all the last sales of Rockridge houses since March of 1968 and the size and quality of this, the best available, data base will not change until next year. Furthermore, should we be unable to detect any BART impact by using the best data available, then for policy purposes we conclude that no impact on sales prices has occurred. This conclusion rests on the belief that good policy is based on empirical evidence and not only on theoretical postulates.

Precedent Studies:

W. Bruce Allen and David E. Boyce are pioneers in the measurement of a transit system's impact on residential property values. Their studies of the Philadelphia-Lindenwold High-Speed Line have led them to conclude that the system had a positive impact, that property values increased as a result of the system:

> The empirical results indicate that $1 travel cost savings per day adds about $2,000 to house prices before the operation of the Line and about $3,200 in the after period.[2]

A before-after approach was employed by Allen and Boyce to detect this impact. Their model specified that house prices were a function of number of stories per building, construction type, inflation rates, the square root of the lot size, distance from the center of the city and savings accrued as a result of the transit system. Travel cost savings were computed from parking charges, bridge tolls, transit fares and the cost of driving the car. As much as $5 per day could be saved by rapid transit commuters. The distance from the city center variable accounted for the existing rent gradient. Boyce and Allen found the expected decrease in rent gradient:

> ...all the distance variables are significant and have the expected signs. This implies that the property prices do decrease with the distance from the CBD as location theory suggests. This empirical estimate indicates that the property prices decline $182 per mile away from CBD. When two distance variables are used, it indicates that house prices decreased $215 per mile in the before period and $166 per mile in the after period.... This result agrees with Location Theory.[3]

Comparing rents at a city center and at a point, say, 10 miles out Boyce and Allen expect a decline of $1,660 in property values over this distance, holding everything else constant. But surely the new rent surface is the sum of the attenuation over distance and the price increase that can be attributed to the rapid transit system. If the household at 10 miles out saves $1 in transportation, then Boyce's findings suggest that the property price has increased by $3,200. The net difference between the city center site rent and the 10-mile site rent is 3,200-1,660=$1,540. ie. the rent at 10 miles out is greater than is the rent at the city center.

Without more information about the actual travel cost savings function, suspicion can be cast on Boyce's findings. If savings increase with distance, then these researchers have found an impact which is not in accordance with classical location theory.

The age of a building, its size, quality of construction, amount of depreciation and the neighbourhood characteristics are variables which affect house prices; they are likely to be correlated with the distance and the savings variables and were omitted from the equation.

Our approach to Rockridge is in many ways similar to that of Allen and Boyce. As this problem is simpler and our aim is more modest, the need to specify a single travel cost savings function is eliminated. The Rockridge area is small by comparison with its region, so that the effect of any rent changes across Rockridge that are caused by different parts being at different distances from the region's centers of interest can be ignored. The distance to the BART station variable will be used to pick up any price effects that can be attributed to BART. Since the Alameda County Tax Assessor's files contain 132 variables describing each building, its lot and environs, the omitted variables problem will not emerge.

The Data:

Indirect access was gained to the Alameda County Assessor's machine-readable files containing data on both the sales price of houses and their characteristics.*

Data on some 140 variables are on file for approximately 600 observations on the most recent sale of each Rockridge house since March of 1968. Data on sales occurring before this date have not been recorded. Data on sales which occurred since this date but which are not from "the most recent" transaction are not on the machine-readable file and could not be used in this study.

The Assessor's estimate of the market value of the house, its roll value, replacement cost new, replacement cost less depreciation, replacement cost new of the garage, quality class of structure, degree of delayed maintenance, quality of building, age of building, "effective age" of building computed after considering recent remodeling efforts and maintenance levels are some of the variables on which data is available. Described also are the physical attributes of the house such as the area of each floor, number of rooms, type of dining room, den, basement, number of bathrooms, number of fireplaces, type of garage, size of garage, type of exterior finish of the house, degree of pitch of the roof and architectural style. The lot dimensions are given along with the Assessor's estimate of the usable lot area. Categorical variables tell whether or not the appraiser deems the building's floor plan to be functional, the lot to be under-utilized or over-utilized by comparison with other lots in the area. The view potential of the lot and the extent to which it is exploited is described. The street the house is on is described and the extent of traffic on the street is given. The slope of the lot and of the street are given, according to three categories: flat, medium, steep. The site's access to schools, recreation facilities, shopping, freeways is assessed and variables describe whether or not the proximity is considered by the appraiser as a nuisance, as a convenience or as a detriment because it is non-existent. A "special problem" entry tells whether or not the appraiser believes BART to have increased prices of the property. No such entries were found in the Rockridge file, indicating that the appraisers believe that BART has not increased the market value of the Rockridge houses.

---

*Confidentiality requirements precluded direct access and limited the analyst to the use of the computer software available at the Assessor's office. No information was sought and none was obtained on any identifiable house. All the summary statistics that were released have been scrutinized by the Assessor's staff to ensure the anonymity of each observation.

The sales price of the most recent transactions since March 1968 is recorded after an appraiser judges the sale to be a competitive market transaction. The age of the sale is given in the number of months since July 1975. The most recently sold house on which data is available occurred in March 1975, and the oldest sale in March of 1968.

The walking distance from the BART station to the center of each city block was measured on maps obtained from the Oakland City Planning Department. The variable was entered as a "sub-neighbourhood code." Because the number of values which could be coded in this manner was limited to 30, the distance variable was scaled to measure in units of 50 feet. The variable takes on values ranging from 6 to 42. No finer distance measure was possible given both the confidentiality requirement and the restrictions on the number of control cards.* The distance variable contains a stochastic term with an expected value equal to zero. The consequences of the inexact measure of distance to the station are discussed in the methodology chapter.

---

*At the time the file was prepared for my use and during the period that exploratory runs were made, the number of control cards could not exceed 130. Approximately 60 were used to generate the simplest regressions presented in this paper. Due to restraints on the appraisor's time, only one pass at the data was possible. The first and only regressions run are presented in this paper. This contstraint in some cases mars the elegance of the equations but in no way reduces the import of the findings.

The General Model:

The aim of this section is to present the logic and the assumptions needed to move from the unspecified model represented by equation 1 to a specified linear one as depicted by equation 2. It describes the relationships between the distance variables and the price of houses, the expected effect of the access improvement and of the environmental impacts. It discusses the alternative functional forms of the equation. Four alternative models are specified and their strengths and weaknesses are evaluated. The candidate control variables are presented next. The before-after, the cross-sectional and the cross-sectional-longitudinal approaches to the identification and measurement of the BART impact are discussed last.

A discussion of the relationship between price and the control variables follows. We want to know the difference in the sales prices of comparable houses located at barying distances from the BART station. Since the houses on which we have data are not directly comparable, we have to account for the price differences attributable to other characteristics by means of control variables. Since the final equation must be linear in form, the specification of a non-linear relationship must be accomplished by transforming the variables:

> It would be best if we could derive the conditions for the appropriate inclusion of variables in the model from some theory involving the characteristics of land use. Although we have grounds to treat the price/accessibility relationship through various shapes (and can specify the assumptions behind each choice), there is no basis from which to assert whether the following control variables have an additive, multiplicative, or exponential effect on price. (Douglass Lee, Jr., 1973, Vol. 1, Part III, p. 96.)

Given that we do not have a theory describing how different housing attributes are implicitly priced, we can only speculate as to what is the best functional form for the control variables and then approach the data with alternative specifications. The additive form is chosen when we believe that differences in sales prices attributed to differences in one factor are independent of the other characteristics of the house. The additive form is chosen when we believe that the implicit price people have paid for an extra unit of some attribute is independent of the amount they paid for the other components of their housing purchase. The choice of the multiplicative form rests on a belief that price elasticities describe best the constant relationships between sales price and housing components. The multiplicative form is chosen when the difference in the amount of one attribute, or the presence of some characteristic, is believed to have a proportional effect on sales prices. We choose this form when we believe that the amount people would pay to have an extra unit of some component is proportional to the price they pay for the entire housing bundle.

It is likely that the true relationship is non-linear, that some control variables affect prices additively and others proportionally. The price difference attributable to features which can be added to a building are most likely to be independent of the amount paid for the other housing attributes: the amount an owner can get for them is constrained by the cost to the buyer of installing an extra range, garage, or finished basement. The relationship between the implicit price paid for land and that paid for the improvements is certainly additive in some cases. Once the effect of neighbourhood quality is accounted for, I have no reason to believe that the implicit price paid for an extra unit of land has anything to do with the improvement that is on it. This belief in the additive nature of the relationship is enforced by looking at the extreme case. If the improvement is uninhabitable, investors will buy the land and pay a price which has little to do with the nature of the improvement. This belief in the additive relationship between implicit price paid for land and that paid for the improvement is consistent with theory explaining urban land values as a function of commute costs.

The structural relationship between some characteristics and prices is multiplicative. Differences in neighbourhood quality are likely to affect people's valuation of the other housing attributes and therefore have a proportional effect on sales prices. The age of sale variable, controlling for the effects of inflation, will have a multiplicative relationship to sales price. Many variables describing the quality of the house are also expected to have proportional effects on price. For example, the difference in sales price attributable to the level of maintenance, structural quality and presence of expensive finishes is likely to be proportional to the amount people pay for the other attributes such as floor area and number of rooms.

The choice of functional forms depends on which we believe best depicts the non-linear reality facing us. Because I have no theoretical basis for selecting one functional form over the other, I will, in keeping with the research strategy outlined earlier, use both.

In conclusion, the additive and multiplicative specification of the control variables appear to be equally acceptable. The effect of BART on environmental quality and expectations is likely to be best picked up by the log-linear model while any net positive effects due to the access improvement are best picked up by the additive one.

The Functional Forms:

Should BART have had a large effect on property prices, then a straight-forward additive specification of equation 1 could be used to detect the impact, if not accurately measure it. A large impact is not expected and several functional forms of the general model will be used to detect one. The first equation uses the raw data without transformations:

Model 1

$$P_i = c + \beta d_i + \sum_{j=1}^{L} \alpha_j A_{ji} + E_i \qquad i = 1, \ldots, n$$

and:

$$\frac{\partial P_i}{\partial d} = \beta$$

The appeal of this equation lies in its simplicity. The equation does not account for the fact that the slope of the price gradient may change with distance. The model has no assymptotic properties and the parameter is affected by the choice of the boundaries of the geographical area from which data was obtained. The distance coefficient describes BART's net impact on the Rockridge price-gradient and the model does not account for the fact that this premium may correlate with the prices paid for the other housing attributes.

Model 1'

$$P_i = c + \beta_1 d_i + \beta_2 d_i^2 + \sum_{j=1}^{L} \alpha_j A_{ji} + E_i \qquad i = 1, \ldots, n$$

and:

$$\frac{\partial P_i}{\partial d} = \beta_1 + 2\beta_2 d$$

Since the impact is expected to attenuate with distance, the coefficient for the distance squared variable is expected to have the opposite sign to that for the linear variable. The introduction of the second distance variable clearly reduces the power of the test. The variance of the estimates is increased and the degrees of freedom are reduced.

Model 2

$$P_i = c + \beta d_i^{-1} + \sum_{j=1}^{L} \alpha_j Q_{ji} + E_i \qquad i = 1, \ldots, n$$

and:

$$\frac{\partial P_i}{\partial d} = -\beta d^{-2}$$

$$\lim_{d \to \infty} \hat{P}_i \to \sum_{j=1}^{L} \alpha_j \hat{Q}_{ji} + E_i$$

The reciprocal transformation of the distance variable yields a model with attractive assymptotic properties and specifies an impact which attenuates rapidly with distance. This is a specific form of equation 4 in which β_2 is equal to -1. Since only one variable is used to pick up the slope and rate of change in slope, the power of the hypothesis test is not reduced as it was with Model 1'.

Model 3

$$\log P_i = c + \beta \log d_i + \sum_{j=1}^{L} \alpha_j \log Q_{ji} + E_i \qquad i = 1, \ldots, n$$

or:

$$P_i = c d_i^{\beta} \prod_{j=1}^{L} Q_{ji}^{\alpha_j} e^{E_i} \qquad i = 1, \ldots, n$$

and:

$$\left.\frac{\partial P}{\partial d}\right|_{d,\underline{Q}} = \frac{\beta}{d} cd^{\beta} \prod_{j=1}^{L} Q_j^{\alpha_j} = \frac{\beta}{d} P$$

This multiplicative form specifies a price impact which is proportional to the amount paid for the house and one which may attenuate with distance. The model specifies a premium whose size changes inversely with distance and varies proportionally with the price paid for the house. It ignores the belief stated earlier that the true relationship between the access premium and the amount paid for the other housing attributes is an additive one. If the net effect of BART is negative, this model is likely to offer the most powerful test of the null hypothesis.

The final functional form to be tested involves the use of prior information. Equation 4 lends itself to the following non-linear expression whose parameters cannot be estimated by means of ordinary least squares:

Model 4'

$$P_i = \beta_1 d_i^{\beta_2} \prod_{j=1}^{N} Q1_{ji}^{\alpha 1j} e^{E_{1i}} + c \prod_{j=1}^{L} Q2_{ji}^{\alpha 2j} e^{E_{2i}} \qquad i = 1, \ldots, n$$

where: the first expression on the right hand side of the equation describes the BART premium as a function of distance and the housing attributes Q1.

The second expression describes the prices people have paid for the other housing attributes Q2 and should control for the non-BART factors.

If houses are fairly appraised and if the appraisors have not, as they say they have not, adjusted the roll values on account of BART, then Model 4' can be adjusted and rewritten as follows:

Model 4

$$P_i \div Rv_i = c\ d_i^{\beta} \prod_{j=1}^{L} Ql_{ji}^{\alpha_{lj}}\ e^{El_i} \qquad i - 1, \ldots, n$$

where:

P_i	is the price of house i.
Rv_i	is the appraisor's estimated roll value of the house. It represents the appraisor's belief as to the market value of the house.
c	is the coefficient for the constant term. It describes the average ratio of sales price to roll value and accounts for any deliberate discrepancy between these two variables.
Ql_{ji}	are the characteristics across which we expect to observe different price changes that are attributable to the presence of the BART station.
E_i	is the error term.

Since the Assessor is fair, the discrepancy between sales price and roll value is proportional to the value of the house and the constant form accounts for it. Since the appraiser believes that the Rockridge BART station has not affected the sales price of houses, the roll value will not reflect any BART induced price changes which may actually have occurred. If BART has not had an impact, then, with the exception of the constant term, all parameters on the right hand side of the equation are equal to zero. If BART affected prices, then the coefficients for the variables will describe the price impact across distance and the other housing attributes.

The Variables:

The building's environment, lot characteristics, structural and architectural characteristics are expected to affect its sales price. These attributes may vary with distance to the BART station and variables describing them should be considered for inclusion into the regression equation. The required control variables and the available data are described in the following list:

1. ENVIRONS:

Environmental impacts of BART and the Grove-Shafter Freeway: Data is available on a variable which describes whether or not the assessor believes each house to be adversely affected by its proximity to the freeway. It is not possible to distinguish between the environmental effects of the freeway from those of the BART line. Both systems simultaneously affect the quality of the Rockridge physical environment and the "freeway" variable should control for this impact.

Street quality and traffic: Variables in the assessor's files tell whether the house is situated on a through street, boulevard or cul-de-sac. The extent of traffic on the street (heavy, medium, light) is given.

Prevalence of special nuisances: Variables describe the assessor's judgment as to whether or not a house is so close to shops, parks, schools that the proximity constitutes a "nuisance." One variable lists the number of prevalent nuisances which are expected to affect the market value of the house.

Neighborhood aesthetic qualities: Categorical variables identifying three areas of Rockridge have been entered into the data base. The slope of the street is given and this variable can be used to pick out the hill-side houses. While it is commonly said that Rockridge is a diversified community containing a wide variety of houses, it is possible to identify sub-neighborhoods across which neighbourhood quality is relatively uniform. Three categorical variables were entered into the data base to identify the area east of College

Avenue, the area west of the shopping strip but south of Claremont Avenue, and the area in the northwest sector.

Racial characteristics of the neighborhood: Data on the racial characteristics of the environs is not available and the sub-neighborhood variables do not adequately control for this factor. The omission of this variable could be serious were it not for the observation that ethnic characteristics correlate with some of the building and neighborhood characteristics variable. Therefore, the effect of changes across Rockridge in the racial characteristics of its population may in part be controlled for by the building and neighborhood variables. The effect of several recent multi-family public housing projects remains uncontrolled for. The number of such projects is small and they are scattered across one of the sub-neighborhoods. Should their omission bias the estimate of the BART impact parameters, the bias is expected to be very small.

Zoning of lots: Data is available on the current zoning of each lot. Since Rockridge has recently been downzoned, data is unavailable on the zoning which prevailed at the time the house was last sold. Since zoning was quite uniform across the residential areas identified by the categorical variables, the omission of controls for differences in zoning ordinances causes us no problems.

2. LOT CHARACTERISTICS:

Lot size: Data on the actual area of each lot is available as well as on the usable lot area.

Lot slope: After accounting for the positive effect of hillside locations, sloping lots are expected to sell for less than level lots. A variable describing the slope of the lot is available.

3. BUILDING CHARACTERISTICS:

Building size and dimensions: The variable listing the square foot area of the house when used in conjunction with one listing the number of rooms in the house will partially control for differences across space in both the size of the houses and their quality. A variable describing the average size of rooms was constructed to control for differences in the "spaciousness" of houses.

Structure type and quality: Data is available on the appraiser's assessment of the "quality class" of each building.

Condition of building: Houses with recent improvements or with deferred maintenance are identified. Unfortunately, the variables describe the "current" condition of the buildings and do not necessarily indicate the condition they were in when last sold. People buying houses will often make improvements. The variable identifying recent improvements may in fact identify houses which were in poor condition at the time they were sold. Deferred maintenance may have occurred after the purchase of a house by a speculator. The coefficients for these variables may have the opposite sign from that which is expected: recently improved houses may have been in poor condition at the time of sale and had a depressed sales price. The older the sale the greater is the effect of the discrepancy.

Architectural quality: The exterior finishes, the roof slope, the prevalence of a "rustic" character of each house are described in the data base along with the assessor's judgment as to whether or not their plans are functional. The "functional plan" and the "exterior finishes" variables can be used as proxies for architectural quality. The average room size variable, listed earlier, and the presence of central heating and the number of fireplaces will in part be controlling for the differences in the quality of Rockridge houses.

Features: The data on heating systems, garage type, number of fireplaces, number of bathrooms, finish of basements, and the number of items such as range, dishwasher, refrigerator will be used.

4. DISTANCE TO THE BART STATION:

Walking distance to the BART station: The variable used measures the distance from the station to the center of each block. The variable has a stochastic component with an expected mean equal to zero and a standard error whose magnitude is estimable. The error will not affect the expected value of the estimated distance parameter. The stochastic component will, however, increase the variance of the estimate and therefore reduce the power of the statistical tests.*

---

*Consider the true model to be (1) and the model used to be (2).

$$(1) \quad P_i = \beta d^*_i + \alpha Q_i + E_i \qquad i = 1, \ldots, n$$

$$(2) \quad P_i = \beta(d_i + U_i) + \alpha Q_i + E_i$$

$$= \beta d_i + \alpha Q_i + \beta U_i + E_i$$

The standard deviation squared of the distance variable d_i (measured in units of 50 feet) is approximately 75. The typical block in Rockridge is about 200 feet by 500 feet and the typical lot is 50 feet by 100 feet, making the absolute value of U to lie between 125 feet and 325 feet. Measured in units of d the front door of the house i can be in equal probability at distance d_i ± 2.5; 3.5; 4.5; 5.5; 6.5. The expected variance of U is approximately 25, and therefore the standard deviation squared of d^*_i is approximately 100. We know also that the standard deviation of P_i is approximately 8,000. Expecting the right hand variables to account for approximately 90 percent of the variance in price, the expected variance of E is approximately 640,000. Assume that the

The Assessor's data base appears to be adequate for our purposes. No serious specification errors are expected as a result of unavailable data. The final selection of variables will be based on an examination of the data and the final specified list will be presented along with the findings. Variables which exhibit little if any variation will not be included in the equations. Control variables which are highly correlated with others that have a greater effect on price will automatically be excluded in the process of estimating the parameters.

The Approaches:

A cross-sectional, a before-after, and a combined cross-sectional-longitudinal approach can be used to identify the BART impact and it is the aim of this section to evaluate these alternatives. For convenience, the discussion will consider a model containing only three variables whose

---

true value of β is \$ -10, prices drop \$10 for each 50 feet distance from BART. Also assume that the correlation between d and Q is .5 and that observations on approximately 600 houses are on file. The expected variance of b1 using model (1) and of b2 using model (2) are:

$$(1)\quad V(b1) = \sigma_E^2/nS_d^{*2}(1 - \rho\ d,Q) = 640{,}000/(600 \times 100 \times .5) = 21.3$$

$$(2)\quad V(b2) = (\beta^2\ \sigma_u^2 + \sigma_E^2)/nS_d^2\ (1 - \rho\ d,Q) = (100 \times 25 + 640{,}000)/$$

$$(600 \times 75 \times .5) = 29.6$$

The standard deviation of b1 is 4.62 and of b2 is 5.44. If we are willing to reject the null hypothesis when the estimated absolute value of b is greater than its standard deviation, then the error introduced by measuring to block centers is expected not to matter provided that the BART impact is greater than \$5.35 per 50 feet or less than \$4.62 per 50 feet: if it is less, neither model will reject the null hypothesis: if it is greater, then both will reject it.

means have been set equal to zero, i.e.,

3. $P_i = \beta d_i + \alpha Q_i + E_i \qquad i = 1, \ldots, n$

The hypothetical variable Q accounts for all non-access related housing attributes that affect the price of houses and are correlated with distance. The conclusions drawn by the use of this hypothetical model can be generalized and applied to the case where all the control variables are used.

The Cross-Sectional Approach:

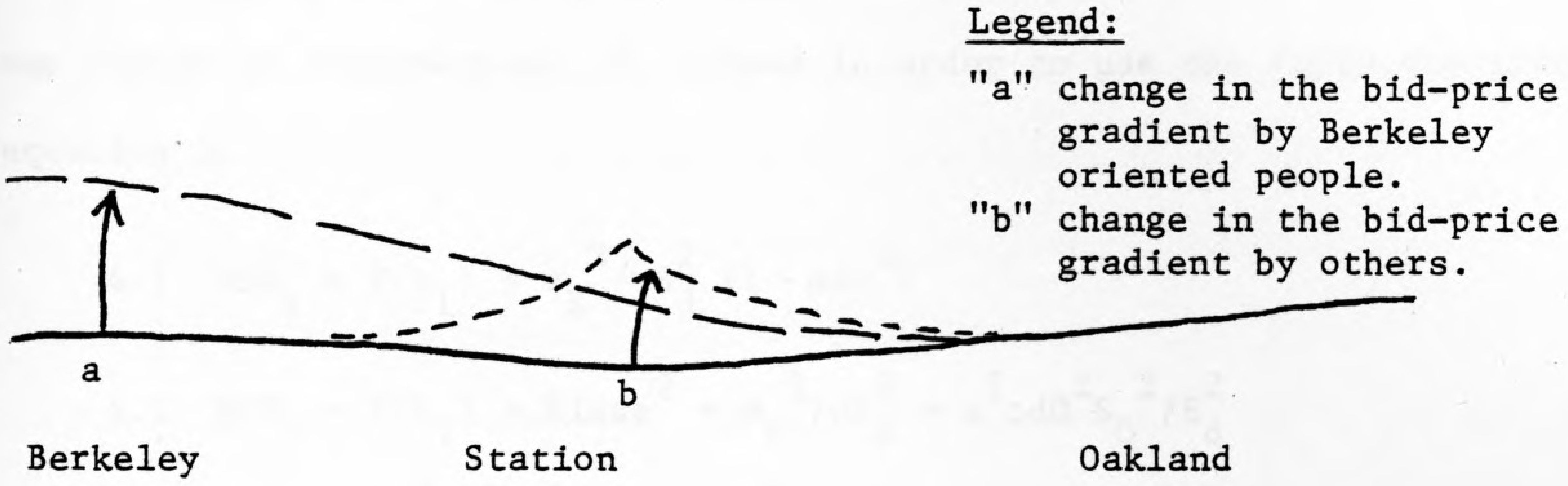
Since specification errors due to omitted variables are not expected to occur, the cross-sectional approach will yield reliable estimates of the price gradient if:

1. The non-BART access attributes across the study area are uniform, and if
2. the number of observations is large and extreme-multicollinearity between the distance and other variables does not prevail.

If BART planners consciously placed the system in what they expected to be the trough of the non-BART (or, other-than-BART) access surface, then the cross-sectional approach will lead to an underestimate of the true BART impact. There are no strong local influences except for BART on the area's access surface. There may, however, have been changes in slope, the non-BART access surface concurring with those potentially induced by the BART system. In the early sixties, Berkeley was able to absorb the demand for housing close to the University of California campus. In the late sixties pressure on the Berkeley and U.C. campus related housing market increased.

Figure 1

The Expected BART Impact With and Without Increase in Demand for Access to Berkeley


Legend:
"a" change in the bid-price gradient by Berkeley oriented people.
"b" change in the bid-price gradient by others.
a
b
Berkeley
Station
Oakland

The spillover into parts of Rockridge of Berkeley-oriented people increased in the seventies. The non-BART price gradient could have shifted upwards in the direction of Berkeley. If the Berkeley-oriented market was distinct from the Oakland and San Francisco CBD-oriented one, an upward shift in the Berkeley direction would have reduced the magnitude of the BART impact but would maintain uniform the non-BART gradient.* The cross-sectional approach can legitimately be used but its power is reduced. Possible shifts in the spatial orientation of the buyers may have increased the slope of the price gradient in the Berkeley direction and reduced the measurable impact that the BART station may have had. The number of observations in the post-BART (post 1973) universe may not be sufficiently large to enable us to detect a small impact. A reduction in the number of control variables may ease the situation at the expense of possibly yielding a misleading result. A comparison of the mean squared error, MSE_1, using the full specification of equation 3 with that, MSE_2, resulting by omitting variable Q can yield an estimate of the minimum number of observations, $\overline{N}$, needed in order to use the fully specified equation 3.

---

*If the Berkeley orientation was large enough and if Berkeley oriented people didn't particularly care for BART, the shift in the Berkeley gradient could have precluded the station from having any impact at all on the price of Rockridge housing.

4.1 $MSE_1 = V(b_1) = {\sigma_E}^2/nS_d^2\ (1 - \rho dQ^2)$

4.2 $MSE_2 = V(b_2) + \text{Biase}^2 = {\sigma_E}^2/nS_d^2 + \alpha^2 \rho dQ^2 {S_Q}^2/S_d^2$

4.3 $\overline{N} = {\sigma_E}^2/\alpha^2 {S_Q}^2\ (1 - \rho dQ^2)$

where:

${\sigma_E}^2$ is the variance of the error term in equation 3.

S_d^2 is the standard deviation of the distance variable squared.

S_Q^2 is the standard deviation of the quality variable squared.

ρdQ is the correlation between the distance and quality variable.

$\overline{N}$ is the minimum number of observations needed in order for the mean squared error of the fully specified model to be less than that using the model with the omitted variables.

We conclude that variables with little price effect, or which are not highly correlated with sales price or with the distance variable can be omitted. Variables whose standard deviation is small relative to that of the distance variable should also be excluded from the equation. Variables with strong price effects, highly correlated with distance and with large standard deviations must be included. The final determination of control variables will be made after the variance-covariance matrix has been examined.

The Before-After Approach:

If the cross-sectional approach failes to reveal the BART impact, and if near-extreme multicollinearity between the distance and control variable is suspected, the almost-before-after approach will be considered. This method attributes to BART the difference in the price gradients measured with pre- and post-BART data. The before-after method may offer the advantage of permitting fewer control variables. Whereas relevant variables in the cross-sectional models had an effect on price, correlated with the distance variable and had a standard deviation which was at least not small relative to that of the distance variable; the relevant control variables using the before-after approach are those:

1. which affect sales price; and
2. which do not have a small standard deviation relative to that of the distance variable; and
3. which are correlated with distance; and
4. whose true implicit prices have changed over time; and/or
5. whose correlation with the distance variable have changed over time; and/or
6. whose standard deviations, relative to that of the distance variable, have changed noticeably over time.

Variables in the cross-sectional list may be dropped whether we believe that the prices associated with them, their correlation with the distance variable, and their standard deviation relative to that of the distance variable are the same across the two time periods.

Consider the following relationships to be true. The first equation presents the true "before" model, the second the true "after" equation. The third describes our belief that the true "before" gradient surrounding the station was flat. The next two equations describe the relationship between distance from BART and the characteristics of houses. The last describes the true "after" price of the qualitative variable as the "before" price plus a constant increment:

$$5.1 \quad P_{1i} = \beta_1 d_{1i} + \alpha_1 Q_{1i} + E_{1i} \qquad i = 1, \ldots, n$$

$$5.2 \quad P_{2i} = \beta_2 d_{2j} + \alpha_2 Q_{2j} + E_{2j} \qquad j = 1, \ldots, n$$

$$5.3 \quad \beta_1 = 0$$

$$5.4 \quad Q_{1i} = C_1 d_i + V_{ij} \qquad i = 1, \ldots, n$$

$$5.5 \quad Q_{2j} = C_2 d_j + V_{2j} \qquad j = 1, \ldots, n$$

$$5.6 \quad \alpha_1 = \alpha_2 - C_3$$

The expected bias using the before-after method of measuring the BART impact can be shown to be:

$$E\,(b_2 - b_1 - \beta_2) = (\alpha_2\, C_2) - (\alpha_1 C_1) = \alpha_2(C_2 - C_1) - C_3\, C_1$$

$$= \alpha_2\left(\rho Q_2 d_2 \frac{SQ_2}{Sd_2} - \rho Q_1 d_1 \frac{SQ_1}{Sd_1}\right) - C_3\, \rho Q_1 d_1 \frac{SQ_1}{Sd_1}$$

If criteria 5 and 6 do not apply to variable Q (they will apply if BART affected the type of houses sold at different distances from its station) and if we have prior knowledge of the way prices have changed for the qualitative attributes, the bias is computable and the before-after estimate of the BART impact can be adjusted accordingly. Whether or not criteria 5 and 6 apply to a variable can be determined by examining the data.

The expected value of the estimated distance parameter is the bias term in the post-BART estimate using the condensed model. Since reliable estimates of the BART impact are sought, the before-after approach will be considered only if the estimated pre-BART parameter is statistically significant. If variable Q is not a relevant control variable according to the six criteria listed earlier, the mean squared error of the before-after estimate of the BART impact is simply the sum of the variances of the estimated parameters. Table 1 compares the fully specified, the partially specified cross-sectional and the before-after approaches. Assumed is that attribute Q covaries with the distance variable but its distribution and associated price have not changed with time. The variance of the error term and the number of observations is assumed to be the same in the pre- and post-BART samples.

Table 1

Comparison of Mean Squared Errors of Three Variable Models Using the Complete Cross-Sectional (MSE_1); Partial Cross-Sectional (MSE_2); and Before-After (MSE_3) Approaches.

$$MSE_1 = \frac{\sigma_E^2}{nS_n^2\,(1 - \rho_{Qd}^2)}$$

$$MSE_2 = \frac{\sigma_E^2}{nS_d^2} + \alpha^2\,\rho_{Qd}^2\,\frac{S_Q^2}{S_d^2}$$

$$MSE_3 = \frac{2\sigma_E^2}{nS_d^2}$$

$$MSE_2 < MSE_1 \text{ when } (1 - \rho_{Qd}^2)\,\alpha^2 S_Q^2 < \frac{\sigma_E^2}{n}$$

$$MSE_3 < MSE_2 \text{ when } \rho_{Qd}^2\,\alpha^2 S_Q^2 < \frac{\sigma_E^2}{n}$$

$$MSE_3 < MSE_1 \text{ when } \rho_{Qd}^2 > \frac{1}{2}$$

The 600 observations taken on the most recent sale since March 1968 are split into three groups of about 200 each. The "before" observations range in age between March 1968 and April 1971 and the "after" observations between January 1973 and January 1975. The average age of houses in the two samples are January 1970 and January 1974. If the price gradient is expected to emerge more or less linearly in time since the announcement of the BART system and the Rockridge station location, the before-after approach as used here measures the impact as it has occurred between these two periods. Since some impact may be traced in the "before" period, the expected value of $b_2 - b_1$ is smaller than would be the case should true pre-BART data be used. The before-after approach to the County Assessor's data offers the advantage of requiring fewer control variables and the disadvantage of seeking to identify and measure a smaller impact.

The best determination of the relevant control variables to be included in the "before-after" approach would be based on an examination of separate "before" and "after" regressions. Variables with large differences in their before- and after-estimated parameters should be considered for inclusion in the final runs. The number of regressions needed would over-tax the Alameda County Assessor's hospitality and prior knowledge of price changes will be used to specify the control variables. Recent trends in the price of existing houses, in Oakland, have shown that the prices of large and spacious houses have increased proportionally more than have the prices of small houses. The price of hillside houses has also increased relative to the price of other houses. The control variables to be included when using the "before-after" approach should describe the square foot area of the building, the average size of rooms, the lot's slope and size.

The before and after approach has been viewed as one utilizing independent pre- and post-BART observations. A version of this approach considers the grouping and pairing of observations. Since this adaptation of the before-after approach has been described in detail by David Dornbush (1974), it will be reviewed only briefly.

The n observations in equations 4.1 and 4.2 can be classified according to K groups of T_K observations in each group.

$$6.1 \quad \overline{P}_{1K} = \beta_1 \overline{d}_{1K} + \alpha_1 \overline{Q}_{1K} + \overline{E}_{2K} \qquad k = 1, \ldots, K$$

$$6.2 \quad \overline{P}_{2K} = \beta_2 \overline{d}_{2K} + \alpha_2 \overline{Q}_{2K} + \overline{E}_{2K} \qquad k = 1, \ldots, K$$

where:

$$P_K = \frac{1}{T_K} \sum_{t=1}^{T_K} P_{tk} \quad \text{etc.}$$

If separate estimates of β_1 and β_2 are made for each equation, the grouping produces less efficient estimates of the parameters than would be the case if individual observations are used. The loss of efficiency is proportional to the loss of the variance of the distance variable as a result of aggregating the observations. If, however, the groups have been selected in such a manner that the average value of the right hand variables are the same in the pre- and post-BART group, then improved estimates can be obtained by pairing the data and estimating β_1 with OLS using the model:

$$6.3 \quad \overline{P}_{2k} - \overline{P}_{1k} = (\beta_2 - \beta_1)\overline{d}_k + (\alpha_2 - \alpha_1)\overline{Q}_k + \overline{E}_{2k} - \overline{E}_{1k} \qquad k = 1, \ldots, K$$

Because the two error terms account for the effect of the omitted variables which are assumed to have the same values in the before and after groups, the error terms are positively correlated. The estimate $(b_2 - b_1)$ is better than one obtained by estimating the separate parameters with the same number of observations.

Therefore, the fewer the number of observations needed in each group to achieve comparability in the before- and after- housing characteristics, the more reliable the estimates. The closer the spatial aggregation describes concentric circles around the BART station, the less the reduction in the variance of d and the more precise the estimate. The ideal case would present itself if each house in the before sample were matched with a similar house in the after sample. Practical considerations precluded the use of this approach.

The Cross-Sectional-Longitudinal Approach:

This method introduces the time dimension, permits the use of all the observations available and increases the difficulty of model specification and of interpretation. Ignoring time and using the cross-sectional approach on all the data would yield an estimate of the distance parameter which accounts for BART's effect on the true price gradient as well as its effect on the change in the type of houses bought across both time and distance adjusted for changes across time in the hedonic price index. If the true model is represented by equation 7.1 and the cross-sectional model 7.2 was estimated, the expression 7.3 describes the estimated price gradient when the time variable takes on the value of zero (as before, all variables have standardized means).

$$7.1 \quad P_i = \beta_o d_i + \alpha_o Q_i + \beta_1 t_i d_i + \alpha_1 t_i Q_i + E_{1i} \qquad i = 1, \ldots, n$$

where:

β_0 is the true current price gradient at time t = 0.

α_0 is the true current implicit price for attribute Q at time t = 0.

β_1 is the change in the price-gradient per unit of time going back and for convenience this change is assumed to be constant over time.

α_1 is the change in the price of attribute Q over time and again the change in price is assumed to be a linear function in time.

7.2 $P_i = \beta d_i + \alpha Q_i + E_{2i}$ $\qquad i = 1, \ldots, n$

7.3 $E(b) = \beta_0 + \beta_1 C_1 + \alpha_1 C_2$

where:

C_1 and C_2 are the partial correlation coefficients found by regressing the distance and qualitative variables against the interaction terms, i.e.,

$d_i t_i = c_1 d_i + c_1' Q_i + \gamma_{1i}$ $\qquad i = 1, \ldots, n$

$d_i Q_i + c_2' d_i + C_2 Q_i + \gamma_{2i}$ $\qquad i = 1, \ldots, n$

Equation 7.3 describes the expected value of the cross-sectional estimate as the sum of the true gradient as it prevails through the time period t = 0 and two terms which can be rewritten as:

7.4 $\beta_1 C_1 = \beta_1 \cdot \dfrac{\sum Q_i^2 \; \sum d_i^2 \, t_i \; - \; \sum d_i Q_i \; \sum d_i t_i Q_i}{\Delta}$

$$7.5 \quad \alpha_1 C_2 = \alpha_1 \cdot \frac{\sum d_i^2 \sum Q_i^2 t_i - \sum d_i Q_i \sum d_i t_i Q_i}{\Delta}$$

where: $\Delta = \sum d_i^2 \sum Q_i^2 - (\sum d_i Q_i)^2$

The interpretation problem disappears whenever observations were made during one time period, i.e., when the true cross-sectional model is used on observations taken at some point in time. If the rate of change in prices have been the same (i.e., $\alpha_1 = -\beta_1$) and if the correlation between the distance and the qualitative variables have not changed over time, then the interpretation problem again disappears: The price gradient estimated by using equation 7.2 is the one prevailing at time t = 0. Without these assumptions the interpretation of the estimated cross-sectional parameters must rest on beliefs regarding the rate of change in prices across time and changes in the types of properties sold across both space and time.

The explicit introduction of time series attempts to ease the interpretation of the estimated parameters and to yield information on the rate of change in prices. This, however, is done at the cost of seriously complicating the specification problem. If equation 7.1 represents the final form of the desired model, then what is required is a new general model which explains the evolution of the BART premium across time, an examination of the change in the prices of other housing attributes and a respecification of the variable transformations. The price for large, spacious, hillside or proximate to BART houses has changed over time but we don't know exactly how. These are the same variables used in the before-after approach. Not having a dynamic model of BART impacts leaves us with the option of identifying the interaction terms by examining the data. Initially a set of categorical variables will be introduced to search for time-attribute-price relationships. To be consistent with the earlier approaches, three dummy variables identifying the "before," the intermediate and the "after" periods will be constructed. The interaction variable will be constructed by simply multiplying these variables with those describing the attributes whose prices are expected to have changed.

CHAPTER 7

FINDINGS

The first part of this chapter describes the sold properties and compares them to the other Rockridge houses. The regression results using the four models described in the last chapter are presented next and the conclusions follow.

Descriptions of Sold Houses:

Of the 2263 houses in the study area, 886, 40%, are located in the visually more attractive area just east of College Avenue. Of the 602 latest sales transactions since March of 1967, 40% occurred in this area, indicating that the homeowners' propensity to sell did not differ across subneighborhoods. The average distance to the BART station is 1285 feet for all houses compared to 1275 for the sold ones. The variance of the distance variable for all houses in 21350 compared to 20925 for those that were sold.

Table 1 presents the spatial distribution of sales with respect to distance to the BART station of house sample. A Kendall's Rank-Order Correlation test was used to search for a trend and none was found; sales activity has not increased in the area adjacent to the station relative to more distance sections of Rockridge.

Table 2 presents statistics on depreciation rates. Houses east of College Avenue have depreciated proportionally less than those on the other side but within each area the depreciation of the sold houses is comparable to that experienced by other houses. Most of the houses considered by the appraisor to be in need of major repairs are to the west of

TABLE 1

Distribution of Sales with Respect to Distance from the BART Station

Distance* (50 ft. units)	Number of Houses	Number of Sales	Proportion Sold	Rank of Proportion
6-9	118	30	25.42	6
10-14	159	38	23.90	5
15-16	177	47	26.55	8
17-20	184	60	32.61	14
21-22	176	54	30.68	13
23-26	173	47	27.01	9
27-28	104	29	27.88	10
29-29	175	36	20.57	1
30-30	167	47	28.14	11
31-32	156	26	22.41	4
33-34	154	51	33.12	15
35-36	155	40	25.81	7
37-37	133	29	21.80	3
38-39	145	31	21.38	2
40-42	127	37	29.13	12
Total/Average	2263	602	26.60	

Kendall's Correlation Statistic	-7
Coefficient of Rank Correlation	-.0667
Significance	.78

*The depth of the consecutive rings was adjusted in the attempt to equalize the number of houses in each group. A non-parametric correlation statistic was used because the depth of the sectors varies.

TABLE 2

Depreciation Rates

	East of College Ave.		West of College Ave.	
	All Houses	Sold Houses	All Houses	Sold Houses
Assessed land value	$20,605	$20,652	$15,351	$15,440
Replacement cost new	33,588	33,508	25,016	25,348
Depreciation amount	18,793	18,685	15,378	15,905
Depreciation % of RCN	56%	56%	61%	63%
No. with deferred maintenance	2	0	33	2
% with deferred maintenance	.23%	0	2.4%	.55%

College Avenue and very few of them have been sold since 1967. Should speculators have under-maintained their properties while planning to convert to a higher intense use, then they have entered the market before 1967 and their effect on sales prices will not be picked up in this study. The similarity between the sold and the other houses suggests that BART has not caused the housing stock to deteriorate.

Table 3 lists the means and standard deviations of the variables. The first column presents statistics on all houses in the study area, the second and third columns describe the houses sold before January 1971, and those sold since January 1973. A comparison of the columns reveals that the sold groups are representative of Rockridge houses with one explainable exception: 9.3% of the most recently sold houses while 5.73% of all houses have been

TABLE 3

Means and Standard Deviations of Variables
Used in Regression Analysis

		All Single-Family Houses in the Study Area		Properties Last Sold Before March 1971		Properties Last Sold Since January 1973	
No.	Variable Name	Mean	S.D.	Mean	S.D.	Mean	S.D.
133	PRICE			23,960.000	7339.800	30,464.00	8830.000
24	d (50 ft. units)	25.69	8.54	25.500	8.810	26.010	8.383
91	FREEWAY BAD	.04	.17	.033	.179	.022	.141
4	RCN GAR/1000	1.10	.68	1.140	.728	1.032	.632
6	TOTAL FT BLDG	1568.72	513.00	1561.300	509.800	1521.200	449.700
16	USABLE AREA LOT	4422.18	1781.33	4282.200	1343.400	4302.300	2235.100
17	CLASS/62	.97	.09	.975	.093	.969	.075
20	AGE BLDG	58.82	9.15	58.120	9.930	59.950	7.370
21	TOTAL RMS	6.13	1.24	6.044	1.174	5.978	1.092
26	NO. BATHS	1.34	.51	1.354	.525	1.264	.445
30	GOOD COND	.06	.24	.050	.217	.093	.292
31	FAIR COND	.06	.22	.030	.171	.071	.258
50	CENTL HEAT	.47	.50	.467	.500	.418	.495
52	NO. FIREPLACES	.97	.69	.940	.423	.995	.551
54	EXTRA EQUIP	.18	.80	.176	.587	.104	.452
55	STUCCO	.54	.50	.505	.501	.478	.501
56	SHINGLE	.22	.41	.225	.419	.286	.453
57	RUSTIC	.17	.37	.044	.206	.165	.372
60	STEEP ROOF	.15	.36	.176	.382	.137	.345
69	DEAD END	.03	.14	.049	.217	.005	.074
72	STREET SLOPE	.12	.53	.093	.310	.115	.337
74	THRU STREET	.05	.22	.044	.205	.071	.258
79	STREET PVG	.17	.37	.170	.377	.192	.395
84	MED. TRAFFIC	.05	.22	.049	.217	.055	.229

(continued)

TABLE 3: Means and Standard Deviations ... continued

No.	Variable Name	All Single-Family Houses in the Study Area		Properties Last Sold Before March 1971		Properties Last Sold Since January 1973	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
85	HEAVY TRAFFIC	.06	.22	.044	.206	.066	.249
106	NUISANCE	.10	.60	.115	.411	.077	.323
112	LEVEL	.37	.72	.341	.685	.434	.761
113	SLOPE	.28	.55	.264	.533	.335	.597
125	IMPS*NEW	.04	.20	.049	.217		
127	BAD*LOCS	.19	.54	.192	.567	.181	.541
132	AGE SALE			68.290	10.040	14.630	5.689
161	N1 E OF COLLEGE	.40	.49	.357	.480	.423	.495
162	N2 NW OF STN			.319	.467	.253	.458
165	N3 SW OF STN			.324	.469	.324	.469

deemed by the appraisor to be in "good condition," i.e., in better than normal condition of houses with similar age and class of construction. Correspondingly, 5.79% of all houses in Rockridge are below the normal condition while 3.99% of sold houses are in this category. People after buying their home tend to fix it up and some sellers repair their property before putting it on the market. This finding, the Alameda County Appraisor's Office assures me, is not unique to Rockridge. BART does not appear to have changed the demand for one type of house relative to that for another type.

Table 4 describes the relationships between distance, price and the candidate control variables. Correlation coefficients smaller than .10 in magnitude are not printed. Larger buildings on large lots tend to be located further from the station and size is highly correlated to the sales price. The houses in above average condition are also located further away but the correlation coefficient between this and the price variable is less than .10. Houses in "fair condition" cost less but are distributed more or less evenly across the west side of Rockridge. The age of sale is not correlated with distance and we can therefore conclude that there has been no major shift in the location of sales since 1967. Houses west of College are approximately 45% more expensive than houses on the other side of the street. Nuisances, other than those caused by schools, heavy traffic or the freeway, and "Bad Locations" appear to be evenly distributed with respect to the station and houses on such lots sell for about the same amount as do the others. Stucco houses sold for more while the shingled houses went for less than average sales price. The "street paving" variable used by the assessor

TABLE 4

Correlations Between Candidate Control Variables and the Distance Price and Age Sale Variables All Cases

		Distance	Price	Age Sale
155	PRICE	.1345	1.0000	-.3153
24	DISTANCE	1.0000	.1345	*
91	FREEWAY BAD	-.2349	*	*
4	RCN GAR/1000	.1055	.3984	.1917
6	TOTAL FT BLDG	*	.7181	.2158
16	USABLE LOT AREA	.1220	.5621	*
17	CLASS/10	*	.6859	*
20	AGE BLDG	-.2640	-.1678	*
21	TOTAL RMS	*	.5585	*
26	BATHS	*	.5780	*
30	GOOD CONDITION	.1299	*	*
31	FAIR CONDITION	*	-.1205	*
50	CENTL HEAT	.1098	.4307	*
52	FIREPLACES	*	.3342	*
54	EXTRA EQUIP	*	.1832	*
55	STUCCO	*	.2281	*
56	SHINGLE	*	-.1062	*
57	RUSTIC	*	-.1732	*
60	STEEP ROOF	*	*	*
69	DEAD END	.1187	*	*
72	STREET SLOPE	.2036	.2758	*
74	THRU STREET	*	*	*
79	STREET PVG	*	.1400	*
84	MED TRAFFIC	*	*	*
85	HEAVY TRAFFIC	.1100	*	*
106	NUISANCE	*	*	*
112	LEVEL	.3001	.4216	*
113	SLOPE	.2627	.4241	*
125	IMPS*NEW	.1979	*	*
127	BAD*LOCS	*	*	*
132	AGE SALE	*	-.3153	1.0000
165	GOOD FNC PLAN	*	.1810	*
161	N1 E OF COLLEGE	*	.4568	*
162	N2 NW OF STN	.3286	-.1633	*
163	N3 SW of STN	-.3554	-.3243	*

*indicates a correlation coefficient of less than .10.

to identify hillside properties is not correlated with distance but does pick out the more expensive houses. The most important control variables in the cross-sectional analysis using all observations describe interference from the freeway, assessed replacement cost of the garage, lot and building size, presence of central heating, street and lot slope and identify the three subsections of Rockridge.

Table 5 presents the correlation coefficients between these same variables across the pre-1971 and the post-1973 groupings. Most of the housing attributes that are related to the sales price are correlated less with the distance variable in the post-1973 group than they were in the earlier one. The effect of the control variables on the variance of the estimated distance parameter is expected to be small when using the recent sales. Since replacement cost of the garage, usable lot area, class of construction, number of baths, presence of central heating are highly correlated with sales price and the variables' correlation with distance has changed since 1971, the variables must be included as controls when attempting the almost-before-after approach. The primary control variables for the cross-sectional method using the recent observations are: age of building, age of sale, exterior finish, level and slope of lot and street, and the categorical variables identifying the subneighborhoods.

The correlations between the control variables and sales prices have also changed. The price difference across the neighborhoods appears to have increased. Although the difference is small, the correlation between usable lot area and price has decreased and that between floor area and price has gone up. The correlations with price of the variables describing the quality

TABLE 5

Correlations Between Candidate Control Variables and the Distance and Price Variable and Age Sale in the Before and After Cases

		DISTANCE		PRICE		AGE SALE	
		Pre 1971	Post 1973	Pre 1971	Post 1973	Pre 1971	Post 1973
24	DISTANCE	1.0000	1.0000	.2503	*	-.1766	*
31	FREEWAY BAD	-.2802	-.2694	*	*	*	-.1752
4	RCN GAR/1000	.1827	*	.4264	.4321	-.1663	*
6	TOTAL FT BLDG	*	*	.6875	.7331	*	.1317
16	USABLE LOT AREA	.2203	*	.5917	.5482	*	.1518
17	CLASS/10	.1524	*	.7567	.7614	*	*
20	AGE BLDG	-.3189	-.3063	-.4977	-.4621	*	*
21	TOTAL RMS	*	*	.4681	.5459	*	.1561
26	NO. BATHS	.1200	*	.5641	.5974	*	.1368
30	GOOD CONDITION	*	.1578	*	*	*	*
31	FAIR CONDITION	*	*	*	-.1836	*	*
50	CENTRL HEAT	.1655	*	.4558	.4815	*	*
52	NO. FIREPLACES	*	.1145	.3093	.4052	*	.1368
54	EXTRA EQUIP	*	*	.2987	.2117	*	.1691
55	STUCCO	*	.1304	.1477	.3101	*	-.1260
56	SHINGLE	*	-.1348	-.1400	-.1095	*	*
57	RUSTIC	*	.1058	-.1445	-.2208	*	.1541
60	STEEP ROOF	-.1262	*	*	.2000	.1048	*
69	DEAD END	.2093	*	.3018	*	*	*
72	STRET SLOPE	.2338	.2559	.4052	.2746	*	*
74	THRU STREET	*	*	*	*	*	*
79	STREET PVG	.1159	*	.2667	*	*	-.2411
84	MED TRAFFIC	*	-.1158	*	*	*	*
85	HEAVY TRAFFIC	.1191	*	*	*	*	*
106	NUISANCE	*	*	*	-.1221	.1539	*
112	LEVEL	.2989	.3540	.5693	.3614	*	*
113	SLOPE	.2783	.2842	.5692	.3589	*	*
125	IMP*NEW	.2728	*	.1690	*	*	*
127	BAD*LOCS	*	*	*	*	*	*
132	AGE SALE	-.1766	*	-.1747	-.1052	1.0000	1.0000
165	GOOD FNC PLAN	.1509	*	.1811	.2030	*	*
161	N1 E OF COLLEGE	*	*	.4296	.5201	*	*
162	N2 NW OF STN	.3562	.21-2	-.1392	-.1984	-.1035	*
163	N3 SW OF STN	-.4399	-.2456	-.3012	-.3648	.1593	-.1358

of the buildings have increased, while that between distance and price has dropped considerably. This suggests that the turnover rate of the better houses located near the station may have increased in the last five years. A comparison of the last two columns in Table 6 leads to the conclusion that there have been no systematic trends carrying across the last 8 years in the type of houses sold.

Regression Results:

The parameters for the four models described in the methods chapter were estimated using a stepwise procedure. The "distance" and the "freeway bad" variables were forced in and the control variables were allowed to enter provided they exceeded an F-level for inclusion of .10. The sequence in which the control variables entered could not be specified and in most runs more control variables were allowed in than were desired. This mars the aesthetics of the equations but does not change the conclusion. The variables are described in Appendix A.

Table 6 presents the results using model 1, and Table 7 lists the values the estimated distance coefficient took at each step. Although the null hypothesis cannot be rejected at the .10 level using a two-sided test, the signs of the coefficient suggest that prices near BART have dropped and that they have dropped more in the post-73 period than in the earlier one. In the first step, Table 8, distance is positvely correlated with sales price and as control variables are entered the magnitude of relationship decreases but the sign doesn't reverse as would be the case should the access attributes of BART have determined its net impact. In the pre-71 group the estimated

TABLE 6

Regression Results: Model 1
Price Against Distance and Control Variables

	PRE-MARCH 1971		POST-JANUARY 1973	
	coef.	t-stat.(1)	coef.	t-stat.
d	161.19	.865	348.43	1.444*
d^2	-3.11	.813	-5.79	1.235
FREEWAY BAD	1392.47	.616	-2845.23	.950
RCN GAR/1000	787.82	1.542**	709.13	1.310*
TOTAL FT BLDG	6.14	4.246**	9.16	7.489**
USABLE LOT AREA	.72	2.555**	.94	4.355**
CLASS/10	22943.05	3.977**	16930.42	2.413**
AGE BLDG	-145.12	2.219*	-108.72	1.806*
TOTAL RMS	-284.93	.625	-277.01	.626
BATHS	-1531.44	1.616*	ne	
GOOD CONDITION	1432.43	.954	ne	
FAIR CONDITION	ne		-1844.59	1.505*
CENTL HEAT	1068.75	1.438*	640.49	.828
FIREPLACES	ne		841.23	1.112
EXTRA EQUIP	377.46	.639	1968.35	2.321**
STUCCO	-2114.97	1.661*	-552.01	.715
SHINGLE	-1501.66	1.116	ne	
RUSTIC	-2278.38	1.116	-1706.30	1.907*
DEAD END	-1599.39	.952	-7063.69	1.761*
STREET SLOPE	ne		841.66	.718
THRU STREET	-2165.86	.952	11035.06	2.488**
STREET PVG	796.85	.831	ne	
NUISANCE	ne		-3387.77	2.915**
LEVEL	1441.56	2.118*	ne	
SLOPE	ne		-1733.72	2.175*
IMPS*NEW	-2633.16	1.285*	ne	
BAD*LOCS	414.28	.438	4099.09	1.817*
AGE SALE	-94.36	3.034**	-325.90	5.727**
N1 E OF COLLEGE	ne		3982.50	4.366**
N2 NW OF STN	1881.10	2.015*	ne	
GOOD FNC PLAN	ne		1626.09	2.050*
Constant	5053.53		7712.24	
quared	.7573		.8352	
tatistic	19.4673		31.625	
ber of Cases	182		182	
ndard Error	3895		3861	

Absolute value of the t-statistic.

Statistically different from zero at .10 probability level.

Statistically different from zero at .01 probability level.

TABLE 7

The Coefficients and t-Statistics for the Distance to BART Variables at Each Step During the Stepwise Entry of Control Variables

Model 1: Post-January 1973

Step #	Variable #	Variable	Coefficient for the distance variable	t-Statistic for the distance variable
1	91	FREEWAY BAD	134	1.658*
2	17	CLASS/10	54	.831
3	6	TOTAL FT BLDG	84	1.879*
4	161	N1 E OF COLLEGE	70	1.616*
5	132	AGE SALE	56	1.342*
6	106	NUISANCE	69	1.709*
7	54	EXTRA EQUIP	136	1.744*
8	20	AGE BLDG	33	.800
9	74	THRU STREET	36	.889
10	113	SLOPE	50	1.334*
11	165	GOOD FNC PLAN	52	1.292*
12	57	RUSTIC	60	1.487*
13	69	DEAD END	62	1.552*
14	127	BAD*LOCS	56	1.392
15	31	FAIR COND	57	1.425*
16	4	RCN GAR/1000	58	1.442*
17	52	NO. FIREPLACES	55	1.378*
18	151	d^2	329	1.393*
		Coefficient for d^2	-5.42	1.179

*Indicates that the statistic is statistically significant at the 10% level.

coefficient for the distance variable washes out after the inclusion of the first five control variables. In both regressions the entry of the distance squared variable improves the estimates, indicating that a curve fits the price gradient better than does a straight line. After the first, the class of construction, variable is entered the difference between the two distance coefficients is not statistically significant and the almost-before-after approach does not permit us to reject the null hypothesis. As more variables are entered the power of this approach decreases.

Table 8 presents the estimated equation for model 2. If BART has caused the sales price of single family houses to increase, the coefficient for the reciprocal distance variable will be positive. A negative coefficient was estimated which is different from zero, at the .10 probability level using a two-sided test. The null hypothesis is rejected in favor of the alternative stating that BART's net impact is negative. The Rockridge BART station appears to have caused a decline in the sales prices of houses.

Table 9 shows the value of the distance coefficient at each step during the entry of the control variables. The simple correlation between price and reciprocal distance is less than before. In the post-1973 regression the statistical significance develops only after control variables are entered. The variance of the estimate in both groups is less than it was when using the non-transformed distance variable. The curvature described by the reciprocal transformation appears to fit the price gradient better than did the straight line or the parabola. Table 10 describes the change in price and the price gradient with distance from the BART station. The slope has become steeper over time and the magnitude of the impact appears

TABLE 8

Regression Results: Model 2
Price Against Reciprocal Distance and Control Variables

		Pre-March 1971		Post-January 1973	
		Coef.	t-Statistic	Coef.	t-Statistic
152	1/d	-14,403.00	1.110	-29,847.00	1.698*
91	FREEWAY BAD	2071.00	1.125	-4,174.00	1.039
4	RCN GAR/1000	758.09	1.505*	730.78	1.339*
6	TOTAL FT BLDG	6.25	4.358**	9.19	7.477**
16	USABLE AREA LOT	.70	2.470**	.91	2.406**
17	CLASS/10	23,446.89	4.096**	16,949.85	2.406**
20	AGE BLDG	-131.39	2.027*	-100.95	1.654*
21	TOTAL ROOMS	-323.07	.718	-248.85	.562
26	BATHS	-1551.68	1.655*	ne	
30	GOOD CONDITION	1327.45	.889	ne	
31	FAIR CONDITION	ne		-1822.25	1.482*
50	CENTRL HEATING	1012.34	1.394*	573.39	.737
52	FIREPLACES	ne		858.95	1.125
54	EXTRA EQUIP	406.83	.703	1900.89	2.808**
55	STUCCO	-2091.68	1.658*	-539.41	.698
56	SHINGLE	-1616.72	1.201	ne	.840
57	RUSTIC	-2326.46	1.681*	-1745.22	1.906*
60	STEEP ROOF	-276.05	.346	ne	
69	DEAD END	-1586.13	.549	-6845.14	1.703*
72	STREET SLOPE	ne		812.39	.691
74	THRU STREET	-1449.50	.981	-9745.30	1.893*
79	STREET PAVING	785.43	.825	512.44	.632
84	MEDIUM TRAFFIC	-1079.61	.720	-1194.85	
85	HEAVY TRAFFIC	ne		2609.99	.412
106	NUISANCE	ne		-3694.27	2.669**
112	LEVEL	1363.81	2.062*	ne	
113	SLOPE	ne		-1935.38	2.416**
125	IMPS*NEW	-2723.92	1.365*	ne	
127	BAD*LOCS			4747.57	1.675*
132	AGE SALE	-89.41	2.937**	-316.79	5.403**
161	N1	ne		4082.77	4.362**
162	N2	1600.49	1.884*	ne	
165	GOOD FNC PLAN			1584.59	1.999*
	Constant	6457.98		7016.50	
R-squared		.7581		.8353	
F-statistic		20.4981		30.2376	
Number of cases		182		182	
Standard error		3876.		3872.	

---

*Statistically different from zero at the .10 probability level.

**Statistically different from zero at the .01 probability level.

TABLE 9

The Coefficients and t-Statistics for the Reciprocal Distance Variable at Each Step During the Entry of Control Variables

Model 2: Post-January 1973

	Variable Entered	Coefficient for 1/d	t-Statistic for 1/d
91	FREEWAY BAD	-28432	.785
17	CLASS/10	-20828	.883
6	TOTAL FT BLDG	-44644	2.135*
161	N1 E OF COLLEGE	-43323	2.177*
132	AGE SALE	-36217	1.890*
16	USABLE LOT AREA	-29576	1.611*
106	NUISANCE	-32207	1.808*
54	EXTRA EQUIP	-31578	1.823*
20	AGE BLDG	-18338	1.036
74	THRU STREET	-20625	1.183
113	SLOPE	-25126	1.442*
165	GOOD FNC PLAN	-25095	1.455*
57	RUSTIC	-27807	1.617*
69	DEAD END	-28926	1.691*
127	BAD*LOCS	-27209	1.594*
31	FAIR COND	-28475	1.673*
4	RCN GAR/1000	-29569	1.741*
52	FIREPLACES	-29031	1.710*
72	STREET SLOPE	-27061	1.577*
84	MEDIUM TRAFFIC	-27504	1.600*
50	CENTL HEAT	-28560	1.652*
55	STUCCO	-29131	1.680*
79	STREET PAVING	-29979	1.720*
21	TOTAL ROOMS	-30391	1.739*
85	HEAVY TRAFFIC	-29847	1.698*

tatistically different from zero at the .10 probability level.

tatistically different from zero at the .01 probability level.

to have increased since 1971.

TABLE 10

Estimated Change in the Price Gradient and the Price of Single Family Houses, Using Model 2

Distance	Price Gradient*		Price Change	
	Pre-71	Post-73	Pre-71	Post-73
500 ft	$144	$298	-$1,440	-$2,985
1000	36	75	-720	- 1,492
1500	16	33	-480	-995
2000	9	19	-360	-746
2500	6	12	-288	-597

*The price gradient describes the increase in sales price per 50 foot increase in distance from the BART station at varying distances from the station.

The first two models estimated the average price effect attributable to BART by using an additive specification. This functional form was thought to best suit the case in which the net impact was the result of the station's improving the access surface. Our findings indicate that prices have dropped, that the environmental factors have had the dominant effect. The discussion in the methods chapter pointed out that environmental consequences are likely to affect sales prices proportionately and therefore the multiplicative form is best suited to measure the magnitude of this impact. Table 10 presents the results using the log-linear model and confirms these beliefs. The price of houses increases with distance from the station after the negative environmental impact due to the freeway is controlled for and 31 other variables describing the buildings and their locations have been entered into the equation. Due to a programming error, the pre-1971 run aborted and instead the log-linear model using all observations is presented. In both cases the null hypothesis is rejected and the BART's dominant impact on sales prices appears to be brought about by the station's environmental consequences. The coefficient for the variable identifying houses whose value the appraisor feels has been detrimentally affected by the freeway is for the first time statistically different from zero and indicates that houses near the freeway sell for 13% less than do comparable houses located further away. Table 12 shows the value of the log distance coefficient at each step. The magnitude and the variance of the estimate is not affected very much by the control variables and remains statistically significant throughout the entire program.

The conclusion that BART has caused a price decrease would not change if only a subset of these control variables was used. Table 13 describes the change in price of houses located at different distances from the BART station. The third column describes the percent of decrease in price relative to the price of houses located 2000 feet from the station. The fourth column describes the expected selling price at different distances of houses that would sell for $30,000 should they be located 2,000 feet from the station. The proportion prices change per 50 feet is described in the next column and the last one describes the rate at which sales prices increase for $30,000 houses located at different distances from BART.

TABLE 11

Regression Results: Model 3
Logarithmic (Base 10) Transformations of Continuous Variables

		ALL SALES		POST-JANUARY 1973	
		Coef.	t-Statistic	Coef.	t-Statistic
154	log d	.03937	2.059*	.05976	1.785*
91	FREEWAY BAD	-.03549	1.627*	-.10540	1.774*
155	log LOT AREA	.19476	7.462*	.12018	2.698**
156	log TOTL LVG AREA	.63954	3.862**	.49615	9.258**
157	log AVG RM AREA	-.21860	1.290*	ne	9.258**
158	log AGE SALE	-.15518	17.822*	-.14221	5.560**
159	log RCN GAR/10	.00646	2.619**	.00786	1.708*
21	TOTAL ROOMS	-.01013	.844	ne	
26	BATHS	.01051	1.328*	.00889	.641
31	FAIR CONDITION	-.04087	2.934**	.03110	1.606*
33	FUNC PLAN	.00296	.432	.02042	1.751*
50	CENTL HEAT	.00992	1.567*	.00996	.851
52	FIREPLACES	.01333	2.256**	.02815	
54	EXTRA EQUIP	.00743	1.702*	.02210	3.020**
55	STUCCO	ne		-.01184	.609
56	SHINGLE	-.00887	1.313*	-.01624	.837
57	RUSTIC	-.01559	2.086*	-.03897	1.862*
60	STEEP ROOF	ne		-.00485	
69	DEAD END	-.02608	1.559*	-.08554	1.442*
72	STREET SLOPE	.00512	.478	.00987	.523
74	THRU STREET	-.08975	3.186**		
79	STREET PVG	.00678	.878	ne	
84	MEDIUM TRAFFIC	.00495	.384	.01304	.605
85	HEAVY TRAFFIC	ne		-.08816	.944
98	VIEW	.01692	2.236*	ne	
106	NUISANCE	-.02090	2.076*	-.07321	3.952**
112	LEVEL	.01639	1.516*	.00783	.463
113	SLOPE	-.02902	2.076*	-.02944	1.634*
116	STEEP*DOWN	-.01206	.529	ne	
125	IMPS*NEW	.02455	1.213	ne	
127	BAD*LOCS	.03019	2.241*	.08827	2.090*
138	EYR 50*59	.04577	1.459*	ne	
139	EYR 35*41	.05485	3.202**	ne	
161	N1 E OF COLLEGE	.04688	5.242*	.06140	4.184**
162	N2 NW OF STN	.00372	.427	-.01431	1.025
164	POOR FNC PLAN	.01133	.854	.01988	.856
	Constant	2.3834		2.4621	
	R-squared	.7696		.7918	
	F-Statistic	57.4900		20.7848	
	d.f. residual	568		153	
	Number of cases	602		182	
	Standard error	.0622		.0571	

---

*Statistically different from zero at the .10 probability level.

**Statistically different from zero at the .01 probability level.

TABLE 12

The Coefficients and t-Statistics for the Log-Transformed Distance Variable at Each Step During the Entry of Control Variables

Model 3: Post-1973 Sales

Step #	Variable Entered	Coefficient for $\log_{10}d$	t-Statistic
1	FREEWAY BAD	.0562	.998
2	log TOTL LIV AREA	.0837	2.138*
3	N1	.0733	2.078*
4	log AGE SALE	.0538	1.625*
5	log LOT AREA	.0458	1.433*
6	NUISANCE	.0527	1.704*
7	log RCN GAR	.0538	1.776*
8	FIREPLACES	.0451	1.499*
9	THRU STREET	.0469	1.583*
10	EXTRA EQUIP	.0467	1.607*
11	RUSTIC	.0551	1.898*
12		.0537	1.864*
13	DEAD END	.0548	1.907*
14	SLOPE	.0646	2.195*
15	BAD*LOCS	.0597	2.023*
16	FAIR COND	.0602	2.048*
17	N2	.0737	2.365**
18	CENTL HEAT	.0716	2.296*
19	STREET SLOPE	.0663	2.086*
20	HEAVY TRAFFIC	.0638	2.010*
21	POOR FUNC PLAN	.0632	1.980*
22	NO. BATHS	.0650	2.025*
23	SHINGLE	.0623	1.918*
24	MEDIUM TRAFFIC	.0614	1.882*
25	STUCCO	.0628	1.915*
26	LEVEL	.0597	1.789*
27	STEEP ROOF	.0598	1.785*

*Statistically different from zero at the .10 probability level.
**Statistically different from zero at the .01 probability level.

TABLE 13

Estimated Change in the Price Gradient and the Price of Single Family Houses Using Model 3

Distance	$d^{.0597}$	% Change in Price	Price Change	$\frac{.0597}{d}$	Price Gradient*
500 ft	1.147	-7.9%	-$2,370	.00597	$179.1
1000	1.196	-4.0	- 1,200	.002985	89.55
1500	1.225	-1.7	-510	.00199	59.7
2000	1.246	0	0	.00149	44.7

*The price change and price gradient are calculated for a house which would sell for $30,000 if it were located 2000 feet from the station. The price gradient describes the rate of increase in the sales price of a $30,000 house for each increase in 50 feet from the station.

The estimated magnitude of the estimated price drop for the average house using the log-linear model is approximately the same as that found by using the reciprocal transformation. The rate of change in the gradient, however, is slower and this may have improved the fit. While the multiple correlation coefficient and the t-statistic are slightly less for the multiplicative model, the estimates of the distance parameter show less variance and the confidence with which we can reject the null hypothesis increases.

The last model is used as a check. The sales price divided by the assessor's roll value are regressed against the distance and the control variables. The log-linear form is used. Since the appraisors do not believe that the Rockridge BART station has affected property prices, they do not adjust for this factor when determining the roll value of the house.

If we believe that the appraisors do not make systematic mistakes, that the proportion of assessed value to sales price is the same for all

TABLE 14

Regression Results: Model 4
Log_{10} (Price/Roll) Against Log Transformations of Continuous Variables

ALL SALES[1]

		Coef.	T-Statistic
154	log10 d	.04545	2.405**
91	FREEWAY BAD	.01604	.670
155	log LOT AREA	.02998	1.178
156	log TOTL LIV AREA	.15112	.926
157	log AVG RM AREA	-.13346	.803
158	log AGE SALE	-.15009	17.681**
21	TOTAL ROOMS	-.00728	.617
26	BATHS	-.01124	1.464*
30	GOOD CONDITION	-.00855	.789
52	FIREPLACES	.00183	.315
57	RUSTIC	-.01026	1.486*
69	DEAD END	-.03256	1.992*
72	STREET SLOPE	.01446	1.397*
74	THRU STREET	-.11085	3.313**
80	STREET LIGHTS	.01691	.827
85	HEAVY TRAFFIC	.05641	1.614*
98	VIEW	.02060	1.407*
106	NUISANCE	-.00829	.806
112	LEVEL	.00600	.580
113	SLOPE	-.02234	1.632*
116	STEEP*DOWN	.03574	1.617*
125	IMPS*NEW	-.00676	.427
127	BAD*LOCS	.02568	1.697*
140	EYR 35*41	.02031	1.215
161	N1 E OF COLLEGE	-.03170	3.986**
162	N2 NW OF STN	-.00781	.970
	Constant	-.09290	
	R-Squared	.4108	
	F-Statistic	15.4184	
	Number of Cases	602	
	Standard Error	.0612	

---

[1] An attempt was made to use this model on the post-1973 sales observations. Unfortunately, the programming error caused the run to be absorbed. The limited access to data precluded a second attempt on this model.

* Statistically different for zero at .10 probability.
** Statistically different for zero at .01 probability.

TABLE 15

The Coefficients and T-Statistics for the Log Transformed Distance Variable at Each Step During the Entry of Control Variables

All Sales: Model 4

Step #	Variable #	Variable Entered	Coefficient for $\log_{10} d$	T-Statistic
1	91	FREEWAY BAD	.0444	2.326**
2	158	log AGE SALE	.0255	1.629*
3	161	N2 E OF COLLEGE	.0282	1.851*
4	116	STEEP*DOWN	.0310	2.029*
5	69	DEAD END	.0340	2.217*
6	57	RUSTIC	.0360	2.341**
7	140	EYR 35*41	.0350	2.277*
8	72	STREET SLOPE	.0326	2.107*
9	113	SLOPE	.0364	2.322*
10	155	log LOT AREA	.0355	2.262*
11	80	STREET LIGHTS	.0366	2.327**
12	98	VIEW	.0367	2.334**
13	162	N3 NW OF STN	.0427	2.454**
14	21	TOTAL ROOMS	.0451	2.557**
15	26	NO. BATHS	.0459	2.601**
16	30	GOOD COND.	.0590	2.724**
17	52	NO. FIREPLACES	.0493	2.740**
18	74	THRU STREET	.0506	2.736**
19	127	BAD*LOCS	.0457	2.526**
20	85	HEAVY TRAFFIC	.0436	2.406**
21	106	NUISANCE	.0456	2.486**
22	112	LEVEL	.0432	2.320*
23	156	log TOTL LIV AREA	.0443	2.356**
24	125	IMPS*NEW	.0454	2.405**

*Statistically different from zero at the .10 probability level.

**Statistically different from zero at the .01 probability level.

houses, then we can interpret the estimated coefficients for the variables describing each property as the degree to which BART has changed prices across houses with different attributes. I do not hold this belief with sufficient conviction and therefore include the building and site attributes as control variables. Tables 14 and 15 present the regression results and again the null hypothesis is rejected in favor of the negative price impact alternative. Using a two-sided test the null hypothesis is rejected at the .02 significance level. The Rockridge BART station does indeed appear to have caused a decrease in the sales price of single family houses.

Conclusions:

Econometric models were used to isolate that component of the sales price that can be fairly attributed to the presence of the Rockridge BART station. The observations used to test the hypothesis have come from a very special environment. The findings are the result of the economic conditions prevalent at the time the observations were taken, the attitudes of city officials and Rockridge residents, and the tastes, incomes, beliefs, expectations and the other housing options available to those involved in the transactions. These findings are therefore as unique to Rockridge as was its situation. When the findings are transferred out of this context they become in themselves only one new data point. No general statement regarding BART's impact on sales prices can be based on this study.

The models used in this study attempted to estimate the implicit price that people have paid for proximity to the BART station. By including a large set of control variables we attempted to draw away from the price-distance relationship any effect that is attributable to differences in the characteristics of the houses and their surroundings. Although we included a large set of control variables and gave 80 variables the chance to enter the regression equation, we cannot be sure that some specification error or some peculiarity in the relationship among the control variables led us to finding a negative price impact.

The BART lines run along the Grove-Shafter Freeway and the station is at the crossroads of the freeway and the increasingly congested College Avenue. Parking lots were built under the freeway on both sides of College Avenue, extending the asphalt environment at grade level. A Lucky's supermarket and the Claremont Junior High School are located on the north side of the station. Categorical control variables were entered into the regression equation which identified the houses whose market value in the appraisor's opinion is detrimentally affected by the freeway, commercial uses, schools, heavy traffic, and other nuisances. It is possible that the control variables were not adequately picking up the effect of the happenings around the station. The problem of omitted variables can always be raised. It is possible that some other than BART factor caused us to find a positive partial correlation between price and distance. This explanation is plausible, but to accept it we must explain why the use of Model 4 leads to the conclusions found by using the other equations. The roll value, the appraiser's estimate of the market value of the house, is included in the model and the magnitude of its coefficient was set equal to one. Model 4 can be rewritten as:

$$8. \quad P_i = c\, d_i^{\beta} * RV_i * \prod_{j=1}^{L} Q_i^{\alpha_i} * 10^{E_i}$$

The appraiser determines the roll value of houses by using both regression analysis and judgment. The roll value in itself should be picking up the obvious environmental impacts of schools, supermarkets and crowded streets, as well as those due to excessive depreciation, recent remodeling, type and condition of the structure, number of garages and so on. Since the appraiser does not believe that the Rockridge BART station has had a price impact, any impact which may have occurred is not accounted for and its effect would be picked up by the distance and other housing attribute variables. We can believe that the Assessor may have inaccurately set the roll value, that relevant factors which are correlated with distance were omitted. If this were true, then the 22 variables entered into Model 4 can be seen as variables controlling for the possibility that the appraiser made systematic errors in judgment. Even after the introduction of all these "control" variables along with the roll value, the estimated parameter for the distance variable supports the conclusion that a relative price decline occurred near the station during 1973 and 1974. Should this correlation be spurious, due to some omitted variable, then the variable is one which the Alameda County Assessor's Office has not included in its data base and one which does not enter into the Alameda County Assessor's judgment when setting the roll value of houses.

All the statistics presented in this paper are consistent with the conclusion that the Rockridge BART station, rather than being the boon to homeowners, reduced their valuation of proximate location and caused a small relative decrease (less than 8%) in the sales prices of the houses. The findings also indicate that the decrease has been greater during the post-January 1973 period than it was during the earlier one. Because the major impact on the physical environment occurred in the mid-sixties during the construction of the BART and freeway complex and because BART's advantage was felt only after its opening in 1973, the cause of the depression in the price gradient cannot be easily explained by changes in the physical environment brought about by the construction and the presence of the BART-freeway complex. Should the physical presence of the station and the freeway with its fumes and noise have been the single major factor causing the price decrease, then surely the price decline would have started during the construction period and reached an equilibrium shortly after the freeway opened.

One plausible and reasonable explanation of the finding is based on the uncertainty residents and investors may have had regarding the future of Rockridge. In 1969, the Oakland City Planning Department predicted a great development potential for the Rockridge Station area. This prediction was not going to induce home-owners to seek sites near the station. A strong and publicized concern for the future of Rockridge as a single-family environment emerged in the early seventies. It is possible that people who considered several Rockridge locations, considered the potential impact and preferred the more distant houses. In 1974 and 1975, when citizen group protests were being heard by city officials and publicized in the local paper, potential developers and investors may have held off to wait for the turmoil to settle: opposing an active, well-organized citizenry is a risky and costly business. The relative price decline may have been caused by residents fearing the development potential and developers fearing the residents.

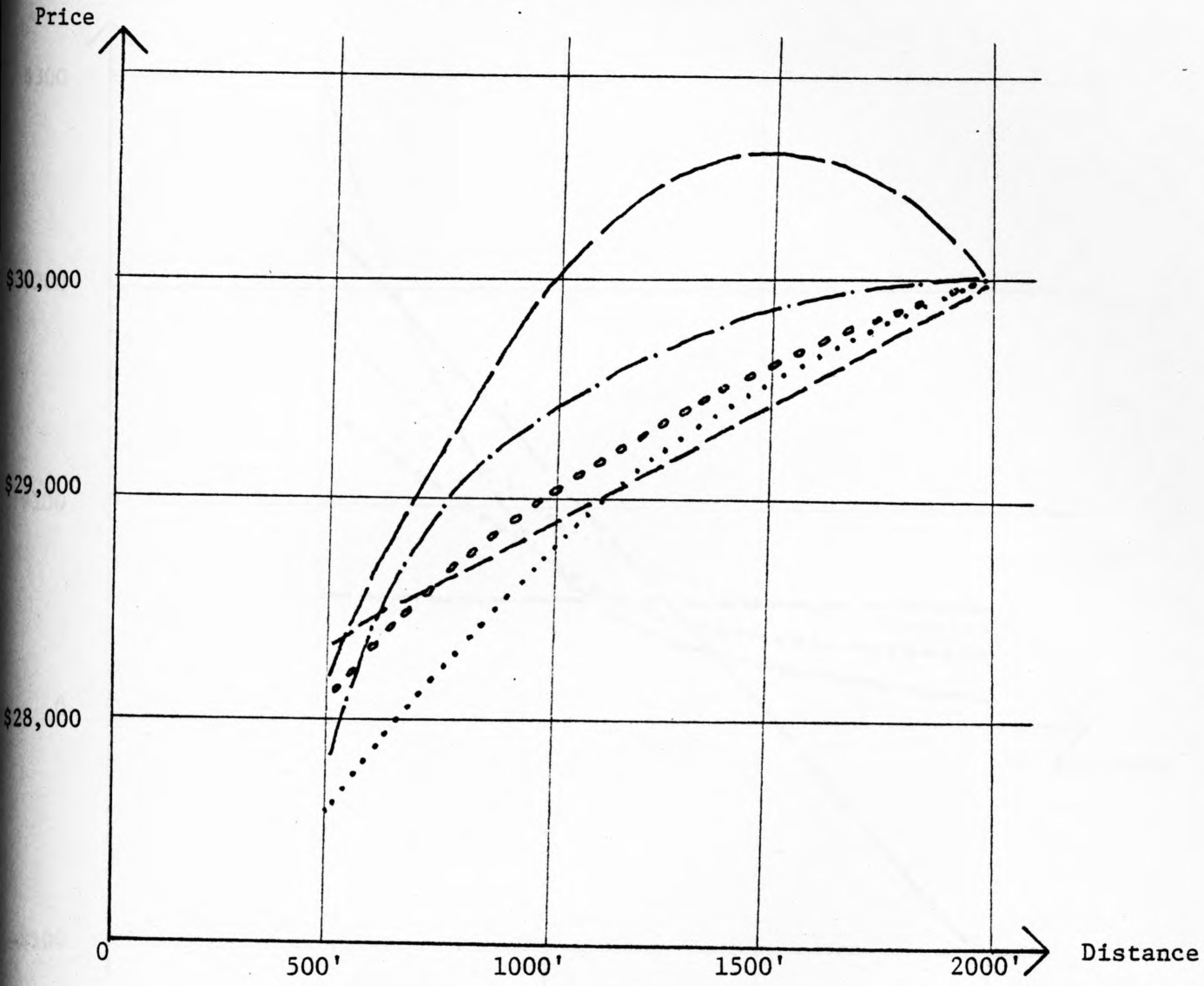
The strength of the conclusions we draw depends on our prior belief as to what really happened. I am convinced as a result of this investigation that the Rockridge BART station did not cause the sales price of houses to increase during the 1968-1975 period. The findings certainly support the conclusion that any positive change due to the access improvement was at least equally counteracted by associated non-physical environmental impacts. The findings support the conclusion that the non-physical, environmental impacts caused a net decline in sales prices. This belief could be strengthened by a more thorough analysis than was possible of the estimated distance parameter's sensitivity to changes in the perimeter of the study area.

The fact that the station did not increase property prices in its vicinity suggests that no major imminent changes in the housing stock were about to occur. Had BART made Rockridge "one of the most attractive areas to investors in residential buildings," then it appears that these investors found Rockridge attractive in ways that did not encourage them to compete for land and drive up its price. The down-zoning decision does not appear to have caused the City of Oakland to have missed any great opportunity to increase its tax base at this point in time. The lack of competition for sites indicates that investors in residential buildings did not at this point in time anticipate the immediate emergence of a large demand for Rockridge locations. People who bought houses did not consider the travel time savings a proximate house offered to be worth more than the other conditions affecting such houses.

To summarize: the market responded to the BART station but its response was not as forecasted by the city planners. The market appears to have responded not to the access improvement but to the conflict and the expectations that were described in Part One of this paper. Figure 1 illustrates the estimated curves. Figure 2 shows the slope of the price curve.

FIGURE 1

ESTIMATED PRICE CHANGES[1]



ESTIMATED PRICE SURFACE

MODEL	LEGEND:	500 ft.	1000 ft.	1500 ft.	t-STAT FOR d
1 LINEAR	— — —	-1,650	-1.100	-550	.10
' QUADRATIC	—— –	-1,768	-21	+568	.76
2 RECIPROCAL	—·—·	-2,439	-940	-449	1.11
3 LOG-LINEAR	····	-2,370	-1,200	-510	1.78
4 LOG-LINEAR[2]	∘∘	-1,950	-960	-395	2.41

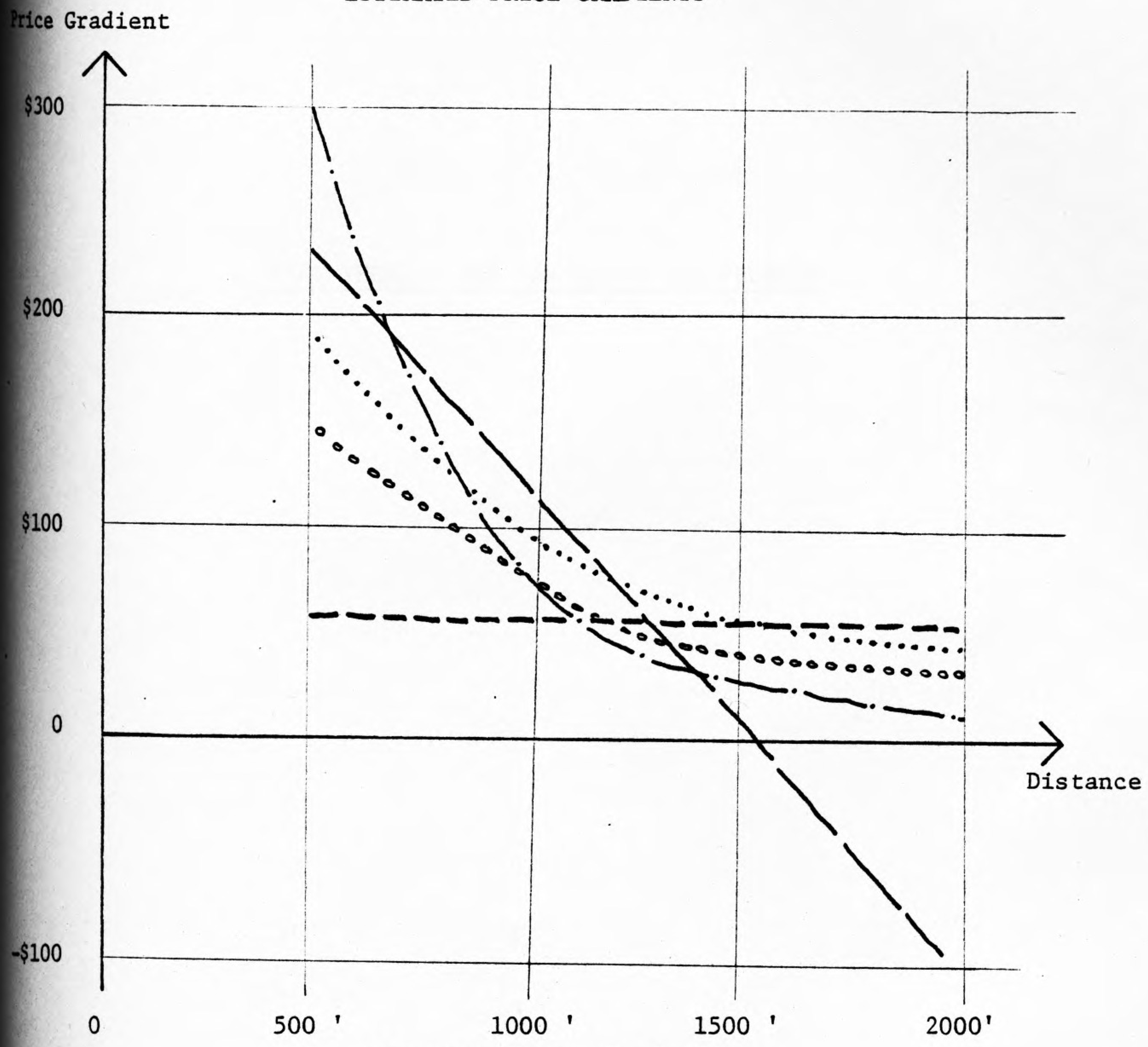
---

[1] Price change is for a house that would sell for $30,000 if it were located 2,000 feet away from the station.

[2] Model 4 is log-linear with the Alameda County Assessor's "Roll Value" variable entered with a parameter set equal to 1. All sales observations are used.

FIGURE 2

ESTIMATED PRICE GRADIENTS[1]



ESTIMATED PRICE GRADIENTS

MODEL	LEGEND:	500 ft.	1000 ft.	1500 ft.	2000 ft.	$\hat{d}$[3]
1 LINEAR	– – – –	55	55	55	55	+55
1' QUADRATIC	—— ——	232	116	2	-115	348 & -5.79
2 RECIPROCAL	—·—·—	298	75	33	19	-29,847
3 LOG-LINEAR	·······	179	90	60	45	.05976
4 LOG-LINEAR[2]	●○○○	136	68	45	34	.04545

---

[1] Gradient is expressed in dollars change per changed 50 feet of distance for a house which would sell at $30,000 if it were located 2000 feet away from the Rockridge BART station. Post-73 sales observations used unless otherwise noted.

[2] All sales observations used with roll value variable entered with a parameter set equal to 1.

[3] Coefficient for the distance variable. The distance variable is in units of 50 feet.

PART THREE

THE NATURE OF THE PROBLEM

PART THREE: THE NATURE OF THE PROBLEM

Introduction

The planners in the sixties and early seventies expected the Rockridge BART station to change the face of Rockridge. By advertising this possibility, by preparing impact statements and publicizing them, a formidable opposition to drastic, uncontrolled change developed. In this process, the market reacted. Rather than the expected increase in market activity near the station, we observed and measured a relative decline. No large-scale development threatens Rockridge. The battles between residents and city officials were over expectations and desired end states.

We observed in Part One that the city planners' approach to the Rockridge development issue changed in the early seventies, when residents [illegible] to oppose the development option. The planners claim to be making "no recommendation", offering only information about how different end states could be achieved. The information that was offered was very limited. Zoning ordinances for the various options were delineated and essentially no side-or after-effects of any of the options were revealed. The city planners opened themselves up to the criticism that a narrow view was being taken, that the regional perspective, which could have changed the city councillors' vote, did not enter into their deliberations.

The aim of Part Three is to explore the nature of the Rockridge

PART THREE

THE NATURE OF THE PROBLEM

Introduction:

The planners in the sixties and early seventies expected the Rockridge BART station to change the face of Rockridge. By advertising this possibility, by preparing impact statements and publicizing them, a formidable opposition to drastic, uncontrolled change developed. To this process, the market reacted. Rather than the expected increase in market activity near the station, we observed and measured a relative decline. No large-scale development threatened Rockridge. The battles between residents and city officials were over expectations and desired end states.

We observed in Part One that the city planners' approach to the Rockridge development issue changes in the early seventies, when residents started to oppose the development option. The planners claim to be making "no recommendation", offering only information about how different end states could be achieved. The information that was offered was very limited. Zoning ordinances for the various options were delineated and essentially no side-or after-effects of any of the options were revealed. The city planners opened themselves up to the criticism that a narrow view was being taken, that the regional perspective, which could have changed the city councillors' vote, did not enter into their deliberations.

The aim of Part Three is to explore the nature of the Rockridge planning problem. We will look at the problem of setting limits to those aspects of a land-use impact that are to be considered and evaluated. The first chapter in this section discusses theoretical problem of bounding planning problems, and relates the findings to the Rockridge situation. The Rockridge problem is described abstractly as a problem in bounding planning activity.

A particular style of planning is then suggested and we choose to define the city planner's task as one of providing information on the consequences of plans. The way information is used to set boundaries on planning problems is then discussed and short comings are revealed. The chapter concludes with a theoretical statement on the role of scientific-technical intelligence in bounding planning problems.

In developing the theoretical arguments, Rockridge served as an example. The task now is to explore the Rockridge land-use problem and show how a planner's recommendation would change with changes in problem boundaries. The boundary problem has not yet been solved and we then attempt to set boundaries by invoking criteria that are not part of the logic of the Rockridge situation.

The last chapter describes the basic problem in the Rockridge case and recommends a planning approach that offers to resolve it.

CHAPTER 8

THE PROBLEM OF BOUNDING PLANNING PROBLEMS

To say that the planning problem is such and such implies, firstly, that it is solved by the removal of the conditions listed in the problem statement; secondly, that feasible means of removing the conditions are believed to exist; and, thirdly, that the planner advocates the solution and stands behind it. A problem is said to exist when the present state of affairs are not as they ought to be, and when this discrepancy is deemed important. The statement of the problem includes the statement of what should be and thereby implies a solution; therefore removes from further consideration the troublesome aspects of the situation. Implied in the planner's statement of a problem is his belief that feasible means to accomplish the desired ends will be found, that a plan can be delineated which will satisfactorily accomplish the ends. Without this belief the problem statement is academic and has no practical value.

The Bounding of Planning Problems:

The statement of a planning problem defines the boundaries of the problem. It explores the various dimensions and the issues that the planner chooses to examine. Once one specific problem has been identified a plan showing the means of attaining the desirable states of affairs can be prepared. But these means will bring about other side- and after-effects, some of which are bound to be undesirable. The problem can then be re-stated to include consideration of the potential side-effects. The planner may now suggest some other means of attaining the desired ends or he may choose to go with the old plan and augment it with a contingency plan which offers to remove the undesirable side-effects. This change in the plan will again create different side-effects and the process can be repeated indefinitely.

When planning is over the problem boundaries have been established and the problem can finally be stated: the boundaries are set for the time being. The boundaries determine the way the problem is resolved.

We have already seen how the definition of the Rockridge land-use problem has changed and how in 1969 the boundaries were set to consider only those issues which affected the chance that the maximum possible level of development would be reached. When the boundaries were re-set to include the residents' wishes and the effect of development on the community, then the solution space changed and means for stopping intensive BART-related projects were explored.

The Purpose of Impact Statements:

The call for an impact statement constitutes recognition of the possibility that the plan for which such a study is required has been prepared by myopic planners, that the boundaries of the problem have been defined too narrowly. The impact statement is to overcome the deficiency of the original planners by revealing other side- and after-effects. Ideally, the purpose of an impact statement is to broaden one's view of a problem. Impact statements should make the original problem appear more difficult. Impact statements which do not do this serve only to legitimate one group's interest over another's.

This happened in Rockridge. The 1969 "Rockridge Station Area" report was prepared by the Oakland Planning Department after consultation with experts from various fields. The experts, though from different fields, appear to have seen the boundaries of the problem in a similar way. The residents of Rockridge perceived that not all consequences were foreseen, that pre-emptive developers were not the only side-effect of the BART created potential that had to be alleviated. It was through the efforts of the concerned members of the Rockridge Community Planning Council, that HUD funds were secured for an impact analysis.

Gruen & Gruen Associates did not prepare an impact statement, and had they prepared one which showed all the side-effects, then the Rockridge situation may have been resolved very differently. The consultants did the first real planning that Rockridge had seen. Gruen & Gruen Associates presented realistic alternatives and then sketchily described in words, not in tax dollars, what some of the side-effects might be. The presentation of realistic alternatives in the context of land-use conflict allowed the residents and city councillors to imagine for themselves what the impact would be.

The consultants, by doing the planning and staging outside the conventional impact analytic framework, affected the situation by handing planning tools over to the Rockridge residents. The Oakland City planners facilitated this process by preparing their 1973 "Alternatives for Rockridge" report which outlined the types of zoning ordinances that could be applied and presented the alternatives in a way that they could be understood by the residents. Having adopted a normative posture, a stance which opened up the view of the Rockridge problem, the city planners could stand back and say that they "make no recommendations as such." The techniques of zoning and the options that the two impact reports delivered in early 1973 had their own impact. Having set the stage, the planners no longer needed to make recommendations.

The Purpose, Intent and Consequences of Plans:

The consequences of a plan are innumerable and the planner who seeks knowledge of them can terminate the inquiry, not by saying that "here is the complete impact statement," but by providing a description of the key events his knowledge allows him to foresee and excusing himself because his time, interest, energy or budget has run out. In doing so he asserts his belief, which is at best based on the knowledge the current state of the art of impact analysis allows him to hold, that the most important consequences have been revealed. This impact statement, though it is inevitably framed by the planner's outlook, can be a key factor in the way in which its consequences are experienced by the people affected. It does so by broadening the "intent" of the plan. C.I. Lewis, in his "Analysis of Knowledge, Valuation and Action", states:

> Action - at least action of the sort called rational and sensible - is for the sake of realizing something to which positive value is ascribed, or of avoiding something to which disvalue is ascribed.... This expectation of a result in the light of which an action is adopted, is its intent; the intent of the act, and the intent of the doer in adopting it. ...
>
> We shall include under 'intent' the whole expected result of the act. Oftentimes such result would be complex, and have parts which would be differently valued. That part of the intent of an act for the sake of which it is adopted, we shall call its purpose.[1]

A plan specifies the means by which a state of affairs is expected to be achieved. By outlining a specific course of action, the plan is believed to effect specifiable results. The ends for which the plan is adopted constitute the policy-maker's purpose. The plan will have other known consequences as well, and some of these may be valued very differently by different groups of people. The policy-maker is assumed to review all the known consequences and make an evaluation of the net effect before deciding to pursue a course of action.

If the "best" plan is one that achieves the policy-maker's purpose while effecting fewest undesirable unforeseen consequences, then it is the one selected from a set of plans for which a deliberate effort has been made to reveal the consequences. The city planner, in reviewing alternative plans, uses his knowledge of the city and his theories to delineate possible consequences and to prepare impact statements. Knowledge and theory, therefore, help the policy-maker in selecting the "best" plan by bringing to his or her attention the other, non-purposeful effects of the alternatives.

Should the revealed impacts be ones that are universally accepted as desirable, then the political context of the policy-maker will allow him to proclaim the side-effects as a part of his purpose in accepting the plan. Should the consequence not be desirable and adversely affect some identifiable group of people, then the fact that it has been revealed makes it an intended part of the plan and one for which the policy-maker is liable.

Should there be a plan, a course of action that is seen as having no undesirable impacts, then, of course, an ideal situation exists. This, however, is never the case in city planning. All land-use plans create external costs as well as benefits, they all have redistributional consequences which adversely affect some segment of the population. The planner not finding any negative effects of a land-use plan has simply not looked hard enough at the situation.

Here, then, lies the problem. The impact analysis enlarges the intent of the plan, and it may well be this very intention to do something undesirable that changes the affected group's experience of the consequence. The intention to do something undesirable can be more odious than the act itself. It is the intention of a plan that shifts our evaluation away from specifics towards an examination of principles and political structures

In Rockridge, the 1969 call for re-zoning to allow high density construction near the BART station altered the context of further changes. Any new building would start a trend; it would no longer be seen as an isolated example to be assessed on its own merits. With the publication of Gruen's impact statement the issues became even clearer. The city council could now not avoid a decision. The two options were to preserve the neighbourhood as it was for residents, or to destroy it. Sides were created and battle lines were drawn. Any move by developers on Rockridge could now only be either sanctioned by council, or prohibited. Council now had to decide whether or not it could intentionally vote on a plan that would possibly destroy the neighbourhood and certainly infuriate a large segment of the city's population. The principle at stake was a community's right to determine the characteristics of its neighbourhood. The opposing principle asserts that council policy should create the most benefits for the largest number of city residents. At this time, however, the regional consequences of the alternatives had not been articulated.

The Context of Land-Use Conflicts:

The bounding problem goes beyond the analysis of the specifics of a situation. The problems are set in a historical context and this setting may affect the planner's view of the problem as much as consideration of costs and benefits of alternative plans. It is the history of the community's experiences with their city council and planning departments that creates or destroys faith in these institutions. The good will that the decision-makers have earned or lost affects how alternative plans are received and how easily compromise plans can be worked out.

The history of a situation affects how the fairness of alternative plans are judged. History is the basis for blame and initiates the quest for retribution. It determines the validity of a planning process. History, by offering precedents, can influence future action.

How the history of Rockridge affected the residents' perception of their city council has been discussed. When the development options for Rockridge are viewed in the context of the decision to put the BART and Grove-Shafter freeway routes through Rockridge, then one's judgment of the fairness of the development plans alters. We may argue that everyone living in a growing city has to bear some of the burden of growth. Residents can be expected to share some of the costs of urban structural changes; but how much they should bear is open to discussion. The Rockridge residents "did not ask for BART and the freeway." They could not participate in the system's planning. Their single-family neighbourhood was defaced by six lanes of overhead concrete. How much more should they take?

Many Rockridge residents lived there at the time the freeway-BART complex was built. They experienced with anger the destruction of their environment, the displacing of their friends who lived in the path of the complex, and the "ruining" of College Avenue. They could blame the city and the state engineers for the access "improvements". Although these plans were carried out and nothing can now be done about the freeway-BART system, the anger remains for many; this mood could well discourage Rockridge residents from listening to proposals that would increase the effectiveness of these capital investments.

When the development issue became a subject for public debate, the Rockridge Community Planning Council obtained a 3-month moratorium on new construction. Since moratoria are granted only while planning studies are being carried out, the Oakland City Council's acceptance of the moratorium was a tacit acceptance of the legitimacy of RCPC's planning effort. At the final council hearings on the Rockridge issue, the opponents to the downzoning plan could be dismissed on the grounds that they had had ample opportunity to enter the recognized planning process while the plans were being prepared. Any last minute changes would undermine the entire planning process.

When setting the boundaries of a planning problem, not only must the planner look ahead to trace the consequences of plans, but he must also look into history to see how the plans are likely to be experienced. It is this, the way alternative plans are likely to be experienced, that determines their contribution to social welfare.

The Context of Land-Use Decisions:

Every planning problem has a context. Land-use issues often involve conflict situations. The decision about what will happen to a neighbourhood is made in an arena in which the fears and visions of different parties are being expressed and in which a council attempts to weigh the relative merits of the arguments and to reconcile them with their own interests and their perception of the interests of their constituents. The process of arriving at the final decision, which determines who is to gain and who is to lose, is often affected by the emotionally charged council chamber and therefore the decision is not based only on the council members' anticipation of the experience of the plan and how this experience would change the welfare of their constituents.

City planners enter a charged atmosphere in which the knowledge they bring affects the decision through its emotional as well as it intellectual impact. The problem of placing logical limits on the planning of land-use expands to include consideration of the consequences of making impact statements public and presenting information on consequences to interest groups.

At the public meeting held in Rockridge, which preceded the Oakland City Council's meeting, the Rockridge representative on Council suggested that the residents had already presented their concerns and should stay away from the council meeting and allow the final decision to be made in a tranquil atmosphere. The residents, not heeding this advice, filled the galleries and overflowed into other rooms in which they could listen to the proceedings over loud-speakers. The Council deliberated in front of some 400 spectators who let their views be known.

The Council had to decide between the people who would be directly and adversely affected by development and were present and those who may indirectly benefit from the development but who were absent. The costs were clearly articulated while the benefits were not. It was a choice between people and profits, between "us" determining the shape of our environment and "they", the anonymous and insensitive forces which show no regard for the community's sensibilities. With the options so delineated, with the mood so charged, with no concrete development proposal at hand, the Council could decide 6 to 1 for the plan prepared by the citizens and the Planning Department, and approved by the Planning Commission.

The question of phasing out the billboards on College Avenue was discussed at length. The Mayor could not vote for a proposal which would cause the loss of even one job in Oakland. What impact could the Director of the City Planning Department have in such a context? When asked, he had to reply that his department had not made an assessment of the number of jobs that would be lost if the billboards were removed. What an impact could have been created had a city planning official, convincingly but erroneously, presented charts showing how an aggressive development program would yield to the dwindling city coffers an additions four to five million dollars in annual tax revenue and create between two to three hundred jobs for the next ten years!

Had the planners in the Oakland City Planning Department served the Mayor's pleasure, then a very different outcome could be expected. Not having an analysis of the market forces which were at work in Rockridge, the belief in imminent great changes could be maintained. These predictions could be based on empirical observations explained by location theory. Had the city planners elaborated on the possible fiscal side-effects of their maximum development alternative and convincingly demonstrated that this option was feasible, then Rockridge residents would certainly have had a steeper, if not impossible, hill to climb.

Summary:

The stating of a planning problem involves the determination of what the states of affairs ought to be like. In the analysis of alternative plans, which are to affect an open system, consequences are revealed that are not at first intended. The problem's boundary expands. When these side- and after-effects become known, they become intended consequences, ones for which the policy-maker cannot ignore, ones for which the policy-maker is liable. Impact statements can therefore have their own impact. It therefore becomes important for the planner to include this side-effect into his problem and the boundaries are again expanded.

In the preparing of an impact statement, boundaries have to be set by invoking some criteria, for limiting the planning activity, that comes from considerations that are outside the context of the troublesome situation. Boundaries have to be set to limit the consequences that are to be explored and evaluated. Every direct consequence will create indirect ones, every indirect one will create others, etc. The way boundaries are set determines how the alternatives are evaluated.

Boundaries have to be determined not only to limit the number and extent of causal chains to be explored, but also to limit the time period that is to be considered. Decisions must be made which limit the extent to which past wrongs will be ammended by future actions. Redistribution consequences are set in a historical context. Boundaries will also be set on the planner's view of his role and possible effectiveness in a decision-making process that may be set in a circus-like context.

We have described some of the difficulties in limiting the planner's scope of work without having defined what the planner's role actually is. In the next chapter we will choose a particular planning approach and then show how this approach helps set boundaries on city planning problems. We will also reveal some of the undesirable side-effects that may be created by this way of bounding planning problems.

CHAPTER 9

THE MANNER OF BOUNDING CITY PLANNING PROBLEMS

When setting boundaries to a planning problem the planner defines the problem and in doing so establishes the problem's boundaries. These boundaries describe the extent to which the consequences of plans are studied, the time period that is considered relevant and the extent that the planner's own activities will affect the situation. The statement of the planning problem and the definition of its boundaries affect the way the problematic situation is resolved, the visibility of the policy-maker's value premises, and the way in which the consequences of the plans are experienced by those affected.

We have argued that city planning problems can never be bound by studying the logic of the situation that gave rise to them. Some consequences will always be unrevealed. The historical perspective can always be changed. The planner's reflection on the effect of his participation can continue endlessly. Yet, despite these seemingly overpowering difficulties, planning problems are solved daily. Problems are bound with reference to criteria which come from outside troublesome situations.

City planning problems can be stated, bound and solved at that point in time when we no longer wish to look at them. We can solve the Rockridge land-use simply by saying: "Let the citizens do the planning." Or, we may deliberate for months reviewing the history, the market's response, and the planning theoretical issues without apparently coming any closer to the problem solution than we were at the beginning.

The way a city planning problem is bounded is also determined by the planner's knowledge, impagination and organizational abilities. An uninspired planner may see the issue as one of maximizing the net fiscal benefits to the City of Oakland, or one of alleviating the congestion that would be created by intensive new developments in Rockridge. An inspired planner may work with citizen groups and try to implement some kind of community development strategy that is controlled by the residents and that seeks to maximize their welfare while also increasing the housing choices of people not yet living in Rockridge.

The planner's knowledge of the city, of planning theory and of the theory of urban spatial structure also determines how the problem will be bound. A planner unfamiliar with location theory would have trouble justifying any prediction of future states of affairs. Without some statistical skills the planner would find it difficult to analyze the existing situation in any depth. Without planning theory the whole bounding problem may never come up and the planner may myopically respond to the greatest of the immediate pressures that are placed on him.

In practice, the problem boundaries are often set by the planner's role and the institution within which he works. The city planner who serves the mayor's pleasure can extend the boundaries of problems only so far, and so often, as not to interfere with the policy-maker's goals and to not be seen to waste the agency's budget on irrelevant speculation. Within this framework the planner does have some freedom. He is not just a politician's back-room person. The planner's ethos prevails. The planner's expertise gives him grounds for enlarging on a planning problem. It is the planner's special knowledge that gives him or her some degree of freedom to move outside the mayor's pleasure and expand the boundaries of city planning problems. But this knowledge itself may be structured in such a way that problems tend to get bound in a certain, relatively safe, manner.

The Planner's Role:

Any general discussion of the planner's role is academic. The role is set by individuals with their own goals in mind. It is also formed by work place, and this combination of factors will produce a variety of opportunities and potentials for the planner to seize.

In this paper, the view is taken of planners who are engaged by the city and who are responsible for informing the policy-maker about possible alternatives and side- and after-effects of plans which are to change the urban and regional spatial structure.

The city planner, of course, cannot be capricious. The planner who serves at the pleasure of the mayor cannot enter the decision-making circus as just another interested party. His opinions must be informed and usually his advocacy must be presented as though it was based on a disinterested view of social welfare. On the function of planning, John Friedman writes:

> Planning in its most general form is an ubiquitous activity ... all deliberate actions consider the value implications of choice, imply acknowledge of alternatives foregone, attempt to relate means to ends efficiently, and correct ongoing actions on the basis of information about results ...
>
> Planning has been given a more precise meaning in contemporary usage. It refers specifically to the application of a scientific-technical intelligence in societal action which include: i) normative thinking, ii) analytic thinking, iii) futuristic thinking, iv) strategic thinking. Action planning is trans-technical.[1]

The city planner who serves at the mayor's pleasure brings to city council's deliberations the benefits of his knowledge of the urban spatial structure. He should be able to describe how the city would adjust should any of the contemplated alternative policies be selected and what the social welfare implications of the adjustment might be: this contribution is the result of "analytical thinking". The description of possible future states of affairs is based on "futuristic thinking". The city planner can also suggest the legislative means by which a plan can be implemented: this is the result of "strategic thinking". The city planner's advocacy, whether expressed directly or implied, is the result of "normative thinking". The adherence to the goal of bringing "scientific-technical intelligence" to bear on a problem, however, may have undesirable side-effects. We will explore this briefly and then show how they may be applied to Rockridge. This will demonstrate how the planner's knowledge of cities was used to lead to forecasts of good changes, when, in fact, none were forthcoming.

Boundaries Due to the Detachment of Scientific-Technical Planning:

To adopt a scientific-technical approach to resolving a troublesome land-use situation is to see the issues in terms of symbols and causal relationships. It is to apperceive real situations in terms that are devoid of feeling and experience. To adopt a scientific-technical planning approach is to remove oneself from the situation as it is experienced. In re-examining science, Merleau-Ponty asks us to go back to our basic experience of the world:

> I am not the outcome or the meeting-point of numerous causal agencies which determine my bodily or psychological make-up. I cannot conceive of myself as nothing but a bit of the world ... I cannot shut my-

> self up within the realm of science. All my knowledge of the world, even my scientific knowledge, is gained from my particular point of view, or from some experience of the world without which the symbols of science would be meaningless. The whole universe of science is built upon the world as directly experienced, and if we want to subject science itself to rigorous scrutiny and arrive at a precise assessment of its meaning and scope, we must begin by reawakening the basic experience of the world of which science is the second order of expression.[2]

We could have approached Rockridge with a set of location models in mind and analyzed the impact of the access improvement in the style that was presented in the first part of Chapter 4. Had the Rockridge situation not been explored in detail, our view of what ought to be happening might have been different. The city officials speaking to the Rockridge community groups in the sixties probably had such a view of the situation. They could then only conclude that development in Rockridge was indeed community-enhancing. Location theory that is based on near-perfect market assumptions tells us that the market's response to access improvement is new buildings and advances in social welfare.

Boundaries Inherent in Land-Use Models:

Land-use decisions involve consideration of such a complex set of issues that the modelling of the process is inevitably based on a limited view of the phenomenon. The problem tends to be bounded before the modelling starts. The premises, behavioural assumptions and style of analysis set the boundaries and remove the troublesome aspects of the problem. The remaining boundaries are fixed by the planner's technical ability to manipulate the models.

It is often the case that most effort is spent on the manipulation of the model and only a brief time is spent determining the model's applicability. The aesthetics of the modelling venture eases the planner's attention away from the troublesome aspects of the situation that is being dealt with, towards manipulating its handleability.

Boundaries Resulting from the Long-Range View:

Most models of the urban spatial structure show the expected long-run consequences of an action on some aspect of the city. Alonso has suggested that the models show the trajectory towards which the spatial structure is induced to move, but that this target may in fact never be reached.[3] As the city's structure adjusts towards a new long-run equilibrium state, other factors intervene and change the target. As a result, the city is constantly changing and so is the long-run equilibrium state to which it tends.

Our current land-use models show the long-run effects of access improvements.* They offer normative implications of the long-run state which, indeed, may never be reached. Adopting the technical approach with its emphasis on long-run modelling will tend to focus attention on welfare conditions that may never be realized. The problems are bound to exclude consideration of the short-run effects which we know little about. This was happening in Rockridge. Planners talked of the benefit that development would bring to the City of Oakland. They ignored the immediate and considerable costs that would be incurred in the process of seeking long-run gains.

---

*Two examples from outside the Rockridge situation may best illustrate the effects of long-run thinking and the detached view of technical solutions. Jay Forrester's Urban Dynamics simulation model suggest that cities that help the disadvantaged will in the long-run house only the disadvantaged and therefore fail to remain viable economic entities. The implied solution suggests regressive policies which would over the short-run (over the next generation or so) cause untold hardships to the disadvantaged.

Leo H. Klaassen's article, "Some Theoretical Considerations for the Housing Market" found in the book Essays in Urban Land Economics (UCLA Press, 1968, pp. 68-76) offers elegant mathematical proof that the market, in the long-run, over-supplies the low income groups with better housing than they should have. The short-run consequences of policies based on such a model need not be commented on.

Boundaries Resulting from Selective Use of Empirical Knowledge:

A planners' prediction of the consequences of a plan are based on empirical knowledge. The planner prepares an impact statement by pointing out that comparable circumstances or actions in the past have yielded a certain kind of outcome. The forecasts are based not on the observation of one occurrence, but of several. Enough observations are needed to establish that some regularity exists in the way that a city's structure responds to a given plan or occurrence. Furthermore, the observations to be useful must come from places which are similar in relevant aspects to the troublesome one that is being examined. Since the prediction is based on observation of repeated actions and results, it is in many cases based on results of a normative planning endeavour. The most reliable forecasts concern events which have occurred most frequently in the past. These events are therefore acceptable. As a result, reliance on selected empirical evidence caused those plans that have been most valued to be most credible and considered apparently workable in the present and future.

Since extraneous factors must be accounted for, evidence is first sought from places that are comparable to the one that is being addressed. It is likely, therefore, that the relevant empirical findings will come from places that have been affected by policy-makers that have similar predispositions to the one to which the planner reports. The planner tends to be selective when determining what evidence is applicable to the situation he is dealing with. The empirical knowledge that tends to be used is therefore likely to support and enforce the policy-maker's prior judgments regarding the relative desirability of different outcomes. The alternatives that are *a priori* likely to be accepted are also those which are delineated with the greatest precision and therefore those which are presented with the greatest force. The empirical knowledge that is utilized tends to give strongest support to the plans that are in accord with values held in the past. Its use can help bound the problem by supporting a conservative view of the situation.

It has been pointed out that many rapid transit stations have not had a land-use impact even after 40 or 50 years of operation. Oakland's city planners chose to ignore these examples and considered relevant to Rockridge only those which described a desirable outcome: those which did bring about development. Empirical evidence, in Rockridge, was selected to suit the future desired by the city officials.

Boundaries Resulting from the Selection of Acceptable Theory:

The planner must base his predictions on an understanding of the situation and on knowledge of the consequences of alternative plans. It is having this knowledge that legitimates the planner's position and provides an imperative for accepting his counsel. The planner gains the knowledge by observing the events that have occurred in similar situations. While the knowledge used in predicting the consequences of plans must have an empirical basis, the fact that it has such a base is often not sufficient. C.I. Lewis writes:

> Cognitive evaluation of an assertion, or an assertive state of mind, looks to the truth of what is asserted; but also it looks to the warrant or grounds of the belief. What is affirmed may happen to be true, but if the one who affirms it lacks a justifying ground for his assertion, then his commitment may be a fortunate one but is nevertheless without validity and is not knowledge.[4]

Empirical evidence is transmitted from similar past situations to the one in question by using theory as the vehicle. It is the theory of the urban spatial structure that gives us "grounds" for the belief that the observation of a past occurrence has meaning in the present situation. The theory gives the assurance that observations of past occurrences were not simply the result of a random series of events. The theory allows us to mould the facts as we have observed them and to give them meaning in the context of the new problem situation. The theory of the urban spatial structure is used to explain why a certain course of action will yield a particular end-state. It is the theory, therefore, that validates the plan.

The theory of the urban spatial structure aims to explain how and why certain types of city patterns emerge. It describes the factors which shape the city and then presents models which show how the city changes in response to changes in these factors. In order to do so, the theory must incorporate models of human behaviour. This behaviour, the actions of the actors, is motivated by their desire to achieve certain goals. The goals are, of course, set with reference to their values. The models, therefore, rest on assumptions regarding the value systems of the city's inhabitants.

Since the persons who implement plans do so to promote city residents' welfare, they cannot but agree with the value premises on which the theory rests, which is used to justify the plans and make them credible. If the planner predicts that development will occur as the result of an access improvement and justifies the prediction by suggesting that such an occurrence is the result of welfare- and profit-maximizing behaviour, then how can a responsible public official reject the normative implications of the theory? He can do this by rejecting the theory outright!

Theories are constructions of which it is pointless to ask whether or not they are correct. The truthfulness of a theory is determined by the critic's point of view. In city planning, therefore, the theory that is used to explain some observed regularity thereby providing the grounds for accepting a plan, is that theory which incorporates a value structure which is acceptable to the policy-makers. The usefulness of a theory lies in its predisposition to justify that set of plans which is politically viable and ideologically correct. The use of the acceptable theory makes plans based on or justified by some other theory less likely to be included in the alternatives presented to the policy-maker; if they are included they are then considered not to have valid theoretical justification.

Theory helps justify those plans which yield the results that are in accord with the purpose of the policy-maker. Theories that enlarge the problem's boundaries and threaten the policy-maker are dismissed as not being true, acceptable or relevant. If the reader doubts this, then he or she may imagine a middle-American mayor's response to a land-use plan which is justified by a Marxist theory explaining how the opening of a rapid transit station creates the opportunity for the powerful to reap undeserved profits at the expense of the human race's quest for emancipation.

Theories of the urban spatial structure are based on value premises. When making explicit use of theory then the problem will be bound by consideration of the consequences that are revealed by applying the acceptable theory. It is likely that the planner who has been hired to inform the policy-maker is one who has shown allegiance to a particular brand of planning which tends to guarantee the use of acceptable theory when justifying alternative course of action.

In Chapter 5, we showed how the market's response to Rockridge could be explained by theories which yield conclusions showing an increase or a decrease in market activity near the station. In Rockridge the city officials chose, as a basis for their predictions, theory that would show an increase in market activity and explain the great development potential. As we have seen in Chapter 7, this theory turned out not to be applicable to the Rockridge situation.

Boundaries Inherent in the Scientific-Technical Approach:

Nietzsche argues:

> Fundamentally, morality is hostile to science: Socrates was so already, and for this reason: that science takes thing serious that have nothing to do with 'good' and 'evil', consequently makes the feeling for 'good' and 'evil' seem less important.[5]

Herbert Marcuse sees the effects as being more insidious:

> The principles of modern science were *a priori* structured in such a way that they could serve as conceptual instruments for a universe of self-propelling, productive control: ...
> Today, domination perpetrates and extends itself not only through technology, but *as* technology.[6]

Jurgen Habermas goes further:

> Technocratic consciousness is on the one hand 'less

> ideological' than all previous ideologies. For it does not have the opaque force of a delusion that only transfigures the implementation of interests. On the other hand, today's dominant rather glossy background ideology, which make a fetish of science, is more irresistible and far-reaching than ideologies of the old type. For, with the veiling of practical problems, it not only justifies a particular class's interest in domination and represses another class's partial need for emancipation, but affects the human race's emancipatory interests as such.[7]

In land-use planning the most problematic aspects are the equity ones; the ones which a technical focus is likely to de-emphasize according to Nietzsche, suppress, according to Marcuse, or potentially abuse, according to Habermas . To focus on the issues that lend themselves to an analytic approach and to emphasize them in the deliberation can lead to the de-emphasis of questions regarding ethically good and bad means of implementing or determining what the land-use ought to be. Technical approaches help set boundaries that exclude consideration of the ethical attributes of plans.

Since a council member's stated ethical conclusion regarding the right and the wrong, the good and bad, means of effecting change in a particular neighbourhood is likely to be highly controversial and have city-wide repercussions, it is likely that the decision-maker would welcome a public discussion which is limited to the specifics of the situation and does not challenge the validity of any one group's claim on the neighbourhood. The city planners structuring the problem in technical terms, in the language of costs and benefits of alternative plans, helps take attention away from the issue of who has the moral right to the neighbourhood.

When planning is primarily a technical endeavour, then its tools become means of effecting control over the environment and their use often justifies redistributions favouring one group of people over others. Highway location planning seen as a technical task for the expert precludes the involvement of citizens who do not have the required skills. The Grove-Shafter freeway planning process is an example of technical know-how supporting the interests of the people who wanted to build the freeway and to have the access improvements over those who were adversely affected by the plan. While the problem was viewed as a technical one, the issues raised by the residents could be ignored.

Are the technical skills of land-use planners such that they serve as "instruments of productive control"? They certainly have been. Urban land-use planning has had development as its usual goal: how can you plan the city without changing it? How can you change it without developers? Land-use planning was one of the first steps in preparing the way for the profitable conversion of land-use. The urban renewal program is an example of a land-use planning strategy that clearly served the interests of one class at the cost of another. To be a city planner one had to work for development and therefore gain those skills which could be used to effect development. While the developers' interests were seen by city planners as furthering social welfare, the planner could comfortably exercise his or her technical skills. When the change occurred, when the side-effects of development became apparent and the residents' protests were heard, city planners had a tremendously difficult time trying to grasp and handle the issues. The skills of city planners and the theory of land-use planning were of no help in dealing with the conflict. The problem's boundaries were forcibly expanded and city planners could no longer conscientiously or comfortably deal with development issues which created serious and increasingly apparent redistribution consequences.

This development orientation in city planning is evident in the

Rockridge case. In 1969 the Oakland Planning Department invited the views of a number of experts on the Rockridge land-use issues. Without apparent reflection, the round-table discussants saw the problem as one of ensuring that the maximum amount of new construction took place. They all bound the problem similarly. The knowledge the experts brought with them helped isolate factors which could prevent the attainment of this goal. They were working within a narrowly bound problem. Pre-emptive developers were seen to retard the process of attaining the maximum changes but the consequences of the residents' political force were not considered. Rockridge residents had been vocal for the last fifteen years and had fought projects which might change the neighbourhood's character both on their specific merit and on the principle or precedent that they set. They had usually lost. They were not considered in 1969 when the discussants could focus on a problem they could solve. Pre-emptive development could be dealt with in a sure manner, and at the expense of the local residents: "sharp contrasts in allowable density could be justified. ... to encourage development of the most suitable high density site first." Once the redistribution problems could no longer be ignored, the planners dropped their position on the built form and the state of the art of city planning could not be drawn on to suggest a manner of approaching the issues in a scientific-technical manner.

Whereas Marcuse talks of the consequence of using technology, Habermass discusses the belief in technology. The belief, he suggests, veils the practical problems and justifies the pursuit of a particular class's interests at the expense of others. This general concept can be brought to bear on the specific problem of determining the use of land. If we believe this problem is a technical one, then in coming to a solution, the theory and technical skills of city planners are invoked and relied on. This tends to perpetuate the process by which developers and investors dispense with neighbourhoods. The belief in technological solutions reduces the desire to have uninformed residents exercise control over their residential area and in this way represses their need for emancipation. Since the technology of land-use planning is not too advanced, it is the belief in it rather than the tools themselves that has the greater force.

Boundaries Resulting from the Aesthetic Appeal of Technical Solutions:

Hasan Ozbekhan, in his article entitled "The Triumph of Technology: 'Can' implies 'Ought'", coins his well-known phrase, " 'Can' has almost unconsciously and insidiously begun to imply, and thereby replace 'Ought'."[8] In land-use planning, technological solutions have been sovereign possibly for aesthetic reasons. Technical solutions are tidy, ordered, internally consistent, elegant, awe-inspiring and at times majestic. Many contemporary city planners, starting with Le Corbusier and perhaps ending with Kengo Tange courted construction technology built dreams with it and offered solutions to urban problems by depicting mile-high mega-structures.

The imperial grandeur of technological solutions have their own appeal, one that planners, the architects of change in the city's spatial structure, have in the past found difficult to resist. The shadows cast by these quests for grandeur are easily overlooked in the excitement. City planning problems have been bound by the planners desire to use technology for aesthetic reasons. The San Francisco CBD dream for North Oakland was probably the result of a stance that looked for heroic changes wrought by the progressive forces of free enterprise which would channel building technology to raise and accent North Oakland's sky-line.

Boundaries Resulting from the Expert's Need for a Solution:

Professionals have command of a unique body of knowledge that they can apply to problematic situations and resolve them in ways that can be judged only by other professionals. A planner, with developed technical skills,

> may increasingly perceive and interpret the world through the lens of his or her particular skills. In this sense, method becomes the organizing basis for a world view.[9]

This world view determines how the troublesome situation will be viewed by the professional, how the problems will be defined and therefore how boundaries are set when exploring the possible consequences and impacts of alternative solutions.

It is not just the professional who bounds the problem by his skills for:

> The knowledge we develop about social policy problems may cause changes of attention and significance to the material that make up the situation under examination. This itself affects how the problem is said to be 'solved'. Professionals are most influential in these changes of attention since they manage the language of description and contextations.[10]

This statement, by Martin Krieger, applies not only because the professional's knowledge gives him or her the power to influence the policy-maker's perception of the problem but also because the professional is usually hired to simplify matters for the client. The land-use expert is usually asked for solutions, not for an expansion of problem boundaries and thereby a complication of the decision-makers' task and an increase in their liability. The professional is called in to lend his expertise in the process of solving problems and Dyckman writes:

> An important rational reason for the delegation of the decision-making function from assemblies of the whole community to expert administrators planners is the gain in information resulting from specialization of functions[11]
>
> The community's confidence rests on the expectation that the expert will not 'contaminate' technical advice with ideological consideration[12]

If the expert seeks to use only technical knowledge, then he or she can never arrive at a solution and decision: we have no science or technology that tells us what ought to be. The planner cannot but introduce a viewpoint, a view of progress, when bounding the problem and deciding on what the key issues are and how they ought to be resolved. The planner, or consultant, usually bounds the problem by relying on a "professional viewpoint". The professional ethic prevails and when the expert wields it unconsciously then his solution is truly based on an ideological posture. The demand from the land-use planner for a solution will usually lead him to grasp the situation with a safe, generally accepted, professional bias.

In the sixties most planners had a background in architecture. They courted the notions of mega-structures and revelled in the idea of urban renewal. They had a development-oriented ethos and it is reasonable to expect that they might take a limited view of how an area should change in response to an access improvement. In the sixties most land-use planners would have called for "spines along BART" and the intense development around the stations.

In the seventies the mood changed and the planner could no longer share the goals of the developers. The old viewpoint was dropped but no clear new one replaced it. Planners could no longer "professionally" set boundaries on the problem and come to a solution that they would be willing to stand behind. The third condition - that planners should be willing to stand behind their solutions (see Chapter 8, above) - no longer holds when the troublesome situation involves the resolution of a land-use conflict.

It was this change in the planners' attitude that affected the outcome of the Rockridge land-use conflict. The planners recognized the openness of the problem and Gruen & Gruen assert that they cannot make a value judgement for "what is good to some may be seen as bad by others". The City Planning Department could not find a solution either and their report "makes no recommendations as such". It was fortunate for Rockridge residents that the planners refused to bound the problem and come up with a solution. By developing alternatives and handing over the techniques of zoning to the residents, the problem was resolved in the political forum where it belonged.

The Role of Scientific-Technical Intelligence in Land-Use Planning:

At the outset of this chapter we chose to consider planning as the activity which "brings scientific-technical intelligence to bear on societal action." Given the problems and undesirable side-effects of adopting such a planning approach, is there a function for which we can use it? The answer is yes! Karl Manheim writes:

> Nothing could be more pointless, and incorrect, than to argue as follows: since every form of historical and political thought is based to a certain degree upon meta-theoretical assumptions, it follows that we cannot put our trust in any idea or any form of thought, and hence it is a matter of indifference what theoretical arguments are employed in a given case. Hence each one of us ought to rely upon his instinct, upon his personal and private intuitions, or upon his own private interests, whichever of these will suit him best. If we did this each one of

> us, no matter how partisan his view, could hold it in good conscience and even feel quite smug about it. ... there exists a fundamental difference between, on the one hand, a blind partisanship and the irrationalism which arises out of mere mental indolence, which sees in intellectual activity no more than arbitrary personal judgements and propaganda, and on the other the type of inquiry which is seriously concerned with an objective analysis, and which, after eliminating all conscious evaluation, becomes aware of an irreducible residue of evaluation inherent in the structure of all thought.[13]

By means of analysis and with the help of a theoretical understanding of urban processes the problem can be structured, and this clarification can help isolate the essential troublesome element on which a purely evaluative stance must be taken. Science, particularly "the sociology of knowledge", Manheim writes:

> gives us a certain foundation but would not free us from the responsibility of arriving at a decision. It does, however, enlarge the field of vision within the limits of which decisions must be made ... Whenever we become aware of a determinant which dominated use, we remove it from the realm of unconscious motivation into that of the controllable, calculable and objectifiable. Choice and decision are thereby not eliminated; ...; we are more and more thrown back upon our true self and, whereas formerly we were the servants of necessity, we now find it possible to unite consciously with forces with which we are in thorough agreement.[14]

The introduction of scientific-technical arguments can help make apparent the nature of the political decision and thereby reveal the redistribution consequences it will cause. A council member's claim that his vote is in the interests of the other residents of the city may be varied by knowledge of likely consequences that can be acquired only by means of applying theory and empirical analysis to the problem at hand. If "action should not only be in accord with the dictates of conscience, but should take into consideration the possible consequences of the action in so far as they are calculable,"[15] then the introduction of scientific-technical intelligence is based on the ethical principle asserting that the decision-maker must be responsible and to be responsible he must be informed. Furthermore, as the decision-maker is informed, so is the public. Information helps make decisions transparent. Since land-use changes affect the open urban system in a complex manner, tracing consequences is a complex matter and one that cannot be carried out by means of intuition alone.

The role of scientific-technical intelligence is not to bound planning problems and therefore to solve them, but to expand the boundaries and to reveal the essential conflicts and troublesome ingredients that can only be resolved by a political decision. It is with this attitude that we proceed to analyze the troublesome elements in the Rockridge land-use planning problem.

Summary:

In Chapter 8 we described the nature of the problem of setting boundaries on planning problems and in this chapter we discussed eight ways in which a scientific-technical approach is used to bound the problems in ways that allow solutions to be offered. The side-effects of setting these boundaries were discussed and no totally satisfactory method was revealed. Some of the characteristic problems associated with the technical approach were presented. We have shown how boundaries are set due to the "detachment" of the technical planner, the nature of models, the state of the art, the selective use of empirical and theoretical information, the ethical constraint in the scientific-technical planning approach, the aesthetic appeal of technical solutions and the expert's need to simplify matters and come up with a solution.

The Rockridge situation was used to illustrate how these ways of limiting the scope of inquiry could affect the welfare of the residents who would experience the greatest impact of the land-use plans. When the consultants and the Oakland City Planning Department dropped the position of having to come up with a solution, the whole boundary problem re-emerged and could no longer be dealt with by the city planner. When the professional could no longer in good conscience stand behind one land-use plan and could not make a recommendation, the political nature of the problem was revealed and the boundaries and the solution had to be made after open public debate.

CHAPTER 10

COSTS, BENEFITS AND THE BOUNDING OF THE ROCKRIDGE LAND-USE PLANNING PROBLEM

The main planning issue in the Rockridge controversy is the determination of whether or not the land around the station should be converted to more intense use. One approach would assess the costs and the benefits to society of the development option and compare them to those that would be incurred should development not occur. For the purpose of this argument, we assume that a development potential would eventually be created, if zoning permitted it. The task appears simple enough: expected consequences should be listed and evaluated according to some method, preferably some apparently objective method. The value of the process by which the plans are to be implemented is not initially considered and the comfortable stance of removing redistribution issues from allocative discussions is adopted. The search is for the most efficient land-use plan, the plan which yields the maximum product for a set of resources. These assumptions are acceptable because an a fortiori argument will be presented below which will dissipate any challenges to the assumptions.

The Direct Costs and Benefits of Development:

The Rockridge BART station makes the area more accessible to the Oakland and San Francisco central business districts than places geographically closer to them. Latent demand for the Rockridge site develops by people who are presently paying a premium to live close to either center. The costs take the form of a rent and of accepting higher density housing. Development of the Rockridge Station area would allow more people the pleasure of using BART than would be the case if the area were not developed. The direct benefit of development is the result of the savings it affords in resources consumed by society in transportation. This resources savings is estimated by computing the real income lost in travelling to the city centers from Rockridge and subtracting this amount from the costs that would be incurred if the people who lived in the new development were being accommodated at the location where the buildings would have been constructed if not permitted in Rockridge. What is involved in making such an estimate is the assessment of the value of travel time, the estimated increase in BART's operating cost as a result of the increased load, and the estimated cost of travelling to the CBD's from the other location by the mode we would expect the people to take.

The first calculation, the assessment of the value of travel time, can be carried out in a routine fashion: the wage rate of the new residents may be used as a proxy and this proxy should be acceptable provided the Cost Benefit analysis yields results that definitively point to one of the alternatives. If the costs and benefits are close, then the use of the proxy is subject to challenges.

The second assessment, that of the added costs to BART of handling the extra riders, can be prepared after the system's cost functions have been estimated. It is assumed that the system can accommodate the increased load at very little additional cost. Again we load the assumptions in favour of the development plan.

The third computation, the assessment of the transportation costs incurred by society should the Rockridge station area not be developed, is both a crucial and a highly problematic one. It cannot be based on generally acceptable assumptions, it must be based on knowledge of where development is likely to occur and on the boundary that is set on the planning problem. BART make Rockridge as accessible as locations closer to the city centers and therefore new high density residential buildings will attract the people who would otherwise choose these closer locations and densities. Since developers would want to convert Rockridge land-use to the maximum density they believe they can market, they seek to attract the people who would otherwise be living in high density residential areas close to the central business districts. In other words, the developers would build in the hope of attracting the people who would not be spending much on transportation at their original location. If population is not increasing, and if we ignore neighbourhood effects, then the net savings in transportation costs are not large as most planners had assumed, but are indeed very small.

If the Rockridge BART station reduces commute time from 40 to 20 minutes, if non-time costs are ignored or are assumed to be the same no matter what mode is used, and if the Rockridge BART-induced development potential is the result of the increased latent demand for sites near the station by people who lived, say, 25 minutes away from the CBD, then the net transportation savings attributed to the development plan is five minutes per new commuter. If the BART system considerably reduces the commute cost from Rockridge, then the intuitive response may suggest that BART offers equally great benefits to all who would live in the area in new highrise buildings. Provided that the opportunity location for such development is closer to the city centers than the Rockridge location, then this response is wrong and leads to a perception of much greater benefits associated with development than is the case.

In a city where population is increasing, the opportunity location of new construction must be considered in the Cost Benefit assessment of the development option. In Oakland, land on which development is feasible is available in the Lake Merrit area. The Alameda County property tax assessors thought that residential development would first occur here rather than in Rockridge.[1] Since this area is within easy walking distance to the Oakland CBD and is served by a BART station which offers a much shorter ride to San Francisco than does Rockridge, then BART-related development in Rockridge would yield fewer savings than would an equal amount of development in the Lake Merrit BART station area. Similarly, development in the Oakland West Station area, the only location on the BART line between the Oakland and San Francisco CBD's, or development in the MacArthur station area, next to Rockridge in the direction of the two CBD's and served by two transit lines, would also yield far greater savings in resources than would an equal amount of new construction in the Rockridge area.

Considering the Rockridge development issues to be maximizing the efficiency of land use, ignoring neighbourhood effect, and adopting a regional perspective leads to the conclusion that the Rockridge area should be developed at some point in time after changes have started in other station areas. Should new buildings in Rockridge draw away development potential in the other areas, then the net social benefit of such development is negative. A planning policy which would effect changes in stages, starting first with other city sites, would in the long run accrue a greater increase in social welfare than would promoting or even permitting the Rockridge development to occur first.

After the inefficient land-uses in the inner city are converted to intense uses and the opportunity location for the new Rockridge buildings moves further away from the CBD's the net savings in transportation costs afforded by changes in Rockridge increase. While the opportunity locations offer better access than Rockridge, if sites are as available within the twenty minute non-BART radius from the centers as they are in Rockridge, then the social benefits of development in Rockridge that accrue from the savings in commute costs are negative.

Other Direct Costs Associated with Development:

Another direct cost attributable to the development plan is the destruction of existing buildings which are in good condition. The preceding argument and conclusion rest on the observation that there are sites at least as accessible as those in Rockridge on which improvements are not much more valuable than they are in Rockridge. If the average annual wage of the incoming Rockridge resident is $12,000 per year or $6.00 per hour, if Rockridge offers a five minute per trip savings over other inner city areas not served by BART, if time lost commuting is valued at the wage rate and the average household makes two trips per day, 251 days per year, then the value of the time saved is $251 a year. Using a 5 percent discount rate to reflect the diminished value of future income in current dollars yields a capitalized savings per commuter of $5,020. If development of a lot raises the unit density five-fold, then the present value of the transport savings per demolished Rockridge house is $25,100. If the average value of the Rockridge improvement is $25,000 and this improvement would be lost due to development, then society appears to gain $100 value for each lot that is converted to the new density*. The Walnut Creek station is about a five minute ride from Rockridge. Vacant lots are available in that station's vicinity, but, given the option of building on new ground at the more distant location or of replacing at an increased density of five to one the $25,000 improvements in Rockridge, the latter choice would yield $100 per lot greater benefits than would the Walnut Creek choice, provided that the transporation cost factor was the only valid consideration. By the same logic, it would be desirable to build at the same density around the West Oakland or Lake Merrit station areas instead of Rockridge, which are some ten minutes closer to the region's centers even if the structures to be demolished at the closer locations are three times as valuable as those at Rockridge. This is not, in fact, the case. Houses in the West Oakland station area are extremely deteriorated and their replacement cost less depreciation is small.

Depending on how we play with the arithmetic, it can show that the net social benefit of channelling the 1,500 units projected for Rockridge into the Lake Merrit or West Oakland areas and, as a result, delaying development of Rockridge by twelve years would yield a net social gain of some 15 to 30 million dollars. In other words, if a public expenditure of this magnitude could cause the development potential to be drawn away from Rockridge and channelled to West Oakland, the society would be no worse off than if development occurred in Rockridge. Any social benefit attributable to the expenditure other than those due to the shift in the location of the development potential would constitute a bonus.

---

* Any conversion to high densities would yield far greater benefits. In the Leung proposal, where the unit-conversion ratio was closer to 20:1, the social benefits due to the savings in trip time would have been approximately $75,000 per demolished unit provided, of course, that the assumptions on which the computation was based held true. This assumes that all lots could be converted to this density since external costs will be created. Since such external costs decrease the potential for development, the savings for the average demolished house will decrease.

A comprehensive planning approach would consider the staging of development across the BART system and the possibility of inducing it in locations that private developers would not be willing to enter without some guarantee that the neighbourhood's characteristics would in the near future change for the better. This brief examination of some of the direct costs and benefits of BART-related development has shifted attention away from issues internal to Rockridge and concludes that the initial development of other areas is the better option.

New Boundaries on the Problem:

We may now bound the problem to exclude consideration of alternative locations in which development would offer greater societal benefits. Planners, we assume, do not implement plans or encourage development. They merely contain it in some areas by means of zoning ordinances.

The issue now becomes one of determining whether or not Rockridge should be developed given that the possibility of shifting the potential development to other areas is excluded from the set of planning options to be considered. The benefit of developing Rockridge was due to the reduction in resources expended on transportation. The cost was due to the early retirement of good housing. Neither the direct cost nor the benefit could be assessed with any degree of certainty because both involve the construction of the state of affairs that would result should BART-related development not occur in the Rockridge area. If we assume that the population of the Bay Area will keep growing with time, then we know that as inner city land becomes more scarce and as bigger buildings have to be demolished to make room for new ones, that the benefit side of the Rockridge equation will outweigh the cost side. This conclusion holds until other side-effects are considered and the boundaries are expanded in a different direction.

Intensive development channelled to one area will considerably change the character of the neighbourhood. In fact, it is the quality of the Rockridge environment that is believed by the city planners to be catalyst for the BART-induced potential. It is the quality of the neighbourhood that attracts the developers who will then change and possibly destroy it. The loss of the neighbourhood's valued attributes must be considered in the Cost Benefit analysis, and there is no generally acceptable method for quantifying the loss and for putting a dollar value on it.

The valuation of this impact is likely to vary a great deal across different people and interest groups*. The loss of the Rockridge character and the disruption of long established neighbourhood networks contribute to the costs development imposes on society. As before, it is not the total cost borne by Rockridge that enters the accounting sheet but the net social costs. If population increases are inevitable then development is necessary. If new development does not occur in Rockridge, then it will take place elsewhere. It has been argued that Rockridge is a unique area, one of the better neighbourhoods in Oakland, and therefore should be preserved. The argument is weak: the value of the buildings have already been accounted for. People living in less visually attractive areas can be expected to attach themselves to their place as well and no one can objectively say that the social cost of changing the neighbourhood's characteristics and of disrupting its established social networks in Rockridge is more or less than in any other part of the city, regardless of its appearance. However, the argument can be advanced which suggests that massive development occuring in one neighbourhood causes a greater disruption to a community, hence greater social costs, than does the same amount of construction spread evenly across the inner city area. The net social costs of breaking up Rockridge are therefore positive and detract from the social desirability of the development plan. The value of this impact is not quantifiable and the value attached to it in Cost Benefit analysis is a matter of personal judgement.

---

*Gruen & Gruen Associates estimated that the characteristics of the area east of College Avenue would allow an apartment owner to charge $80 more than the owner of a building to the west. This figure cannot be used here since we are dealing with residents who have lived a long time in Rockridge and have established community networks.

Since Rockridge is a visually attractive place and the community appears to be a cohesive one, we choose to believe that the cost of its destruction is great and, when added to the loss of structures, the costs at this point in time would marginally exceed the net savings in commute costs attributed to development. This conclusion does not rest on professional judgement, nor is it based on scientific-technical intelligence, and it is not held with a great degree of conviction. Its strength, however, could be changed if we could be assured that development was constrained within the deteriorating parts of Rockridge southwest of the station and further west along the freeway.

Further Changes in the Problem's Boundaries:

The side-effects of actions taken within open systems are innumerable and a pro-development lobby can now find consequences which add to the benefit side. Not only would increased patronage of the BART system reduce directly the resources spent on commuting but they would also do so indirectly by reducing congestion elsewhere in the region. Indeed, it is this side-effect that caused the building of BART: as a result of development, fewer people would take cars into San Francisco and traffic on the city's congested streets would be reduced. Freeway and bridge traffic would also be made easier than it would otherwise be. If these benefits do not tilt the scale in favour of the development option, then more can be listed.

Air pollution per commute trip would decrease and this benefit would accrue to all in the Bay area. With some caution, arguments can be added which suggest that the increase in BART patronage would increase the efficiency of BART operations and lower the average cost per trip. If this is not enough to counter the cost of neighbourhood losses, then national priority arguments can enter the calculation. The United States in a certain number of years must become self-sufficient in its energy production. Cars waste gasoline. As oil becomes scarce people will have to change to public transit modes and in turn the city and regional spatial structures will have to change either as a result of future increases in gasoline costs or as a means for insuring that demand for these fuels is reduced.

And this is not the end of the pro-development arguments, for the national security issue can be raised. The population of the Bay area grew rapidly during World War II as Oakland and San Francisco became key ports for the U.S. war effort in the Pacific Ocean. With the increase in armament production the number of daily commute trips made in the Bay area rose rapidly and congestion became a major problem. Gordon Lewin writes:

> The situation was so critical in 1943 a subcommittee of the House Naval Affairs Committee recommended a freeze in all defence contracts in the Bay area because factories producing war materials were unable to make deadlines. It was claimed that poorly integrated transportation made journeys to work difficult which hampered the production of war materials.[2]

In 1946 a Joint Army-Navy Board's study concluded that:

> ... a fixed rail rapid transit system utilizing a centrally located tube for crossing the Bay should be a component of a comprehensive, long-range plan to solve the trans bay transportation problem.[3]

BART contributes to national defence and so would any plan which included BART. As a result, BART-related development not only benefits the City of Oakland, the San Francisco Bay area, the state of California and the United States of America, but it indirectly benefits the remainder of the "free" world that depends on U.S. armaments. And if you think that the problem's boundaries have now been set, then you are wrong. We can still speak of the world's fixed energy resources and the needs of future generations. How then can we promote a plan which would keep the Rockridge station area as a single-family, low-keyed cohesive and attractive neighbourhood?

Once the development problem is bound geographically it is hard to hold back on the spillovers. This bounding of the problem has had an unsympathetic effect on the cost/benefit accounting procedures. While physical or tangible costs and benefits are considered, the costs are all kept to a limited geographical area while the benefits accrue to the city, the region, and the nation and possibly the rest of the world and the future generations. The asymmetry in the geographic incidence of costs and benefits in the problem as it has been stated favours the development alternative.

As the benefits list expanded, the possibility of measuring them or making reasonable guesses as to their magnitude decreases rapidly. The listing of the consequences evokes emotive evaluative responses. What happens as the boundary of the problem is expanded is a greater reliance on principle. When we think of the development plan's contribution to energy conservation or to the reduction in air pollution, we have little desire to hold back and say that the 1,500 new units in Rockridge are going to have a negligible impact. We think of the effect on energy and air pollution of following the urban development principle of building in areas served by rapid transit. While 1,500 units next to the Rockridge station are not going to do much to help us achieve these important goals, the application of the principle to all cases will. In this way, without being aware of it, a policy-maker can be moved from a direct act-utilitarian approach to the Rockridge issue to a rule-utilitarian one. Instead of evaluating the specifics of the Rockridge case, we are influenced by norms which applied universally, would lead eventually to a greater satisfaction of society's wants. This shift in ethical posture is natural: only the economic models of short-sighted hedonistic man promote the act-utilitarian ethical posture. Keeping to the specifics, maintaining an act-utilitarian stance, which cost/benefit analysis would have us do, leads to a highly uncomfortable position because it leads to the listing of a large number of intangible consequences which we have to evaluate intuitively and by means of the ethical viewpoints we bring to the problem.

It is natural, therefore, for us to adopt a rule-utilitarian posture when evaluating the intangibles listed on the cost/benefit accounting sheet and our conclusions will therefore differ, on this basis alone, from those drawn by a person with a different ethic. When our evaluation is based on the belief that the pursuit of a plan's consequence is beneficial in principle, and while we adhere to a utilitarian ethic, the problem's boundaries again expand past Rockridge. Only by expanding the boundary through starting to look at the consequences of a strategy of funnelling new construction into areas served by the transit system or systems can the principle itself be evaluated. We now need to know the effect on air pollution, on congestion and on energy consumption if development was promoted in all station areas in the country, no, in the world through the next long-range planning period. The consequences will probably be considerable and the principle would appear to be a valid and good one. The attempt to grasp the intangibles have led me away from the ethic presumed in formal cost/benefit analysis.

The Move Out From the Cost/Benefits Framework:

There is, of course, nothing wrong in moving out of the strict cost/benefit framework and deciding on the basis of principle. The evaluation, however, is not concluded nor will it be: we reiterate that plans affecting open systems have innumerable side-effects. The decision to bound the problem in a way that only development in the Rockridge area was considered, placed limits on the geographic incidence of costs but not on the benefits. As the physical impacts were revealed and the list of benefits grew, the ethical base for evaluating the consequences started to shift as a result of our inability to quantify the impact and our emotional responses to them. The shift to a rule-utilitarian posture meant that the evaluation was no longer constrained to the value of the impacts in and of themselves but to the value of the principles used to determine whether or not they should occur. It is now only a small step to include consideration of the processes by which the alternative land-use plans are to be implemented.

Land-use conflicts are not resolved by a display of costs and benefits. The choice of plans determines who wins and who loses and the loser can always challenge the process by which the land-use decision is made and can invoke ethical precepts to justify one's claim to the land. Although the Rockridge Community Planning Council in 1972 was calling for a comprehensive plan which would exploit the BART potential, this desire was not shared by the community. The land-use controversy which developed was certainly not confined to a discussion of the utilitarian value of alternative ends, but included arguments concerning the utility of the principles determining the choice of a particular way of implementing land-use plans. It was a choice between suggesting that the market place determine land-use, and stating that the community has the right to determine the nature of its neighbourhood. Highrise buildings may be in themselves objectionable to the single-family house owner but so also may be the fact that it is the "outsider", the land-owner, the profit-seeking developer who brings them to the community. The indignation expressed in "BART ... is not helping us now. It might just help a lot of people from out of town," challenges the process through which outsiders profit at the expense of local residents.

A decision to develop Rockridge gives support to the principle that the developers, the housing investors, by virtue of their financial position, have the right to destroy the residents' environment. It denies the principle that the residents of a neighbourhood have collectively the right and the responsibility to determine how they as a group want their lives to be affected by land-use plans. News of precedents or of defeated resident groups spreads across the Rockridge boundary as do the indirect benefits listed earlier, and such news can affect people's comfort and well-being. The psychological costs of the development plan go beyond the Rockridge boundary and may express themselves in the form of increased frustration, mistrust of the local political process, sense of futility in trying to effect changes and anger at the manner in which changes are wrought.

TABLE 1

SUMMARY LIST OF SOME COSTS AND BENEFITS ATTRIBUTED TO DEVELOPMENT AND THE DATE REQUIRED FOR THE ASSESSMENT

1. Development reduces amount of resources spent on transportation:
    - Cost of Commute Time
    - Cost of BART Operation and Use Due to Additional Load
    - Optional Mode Cost
    - Opportunity Location of Development
2. Development retires good housing stock:
    - Value of Improvements in Impact Area
    - Value of Improvements in Opportunity Area
3. Development reduces congestion on other streets:
    - Opportunity Location of Development
    - Optional Mode Used
    - Impedence Due to Optional Use
4. Development reduces pollution per commute trip:
    - BART's Polluting Effect for Additional Load
    - Opportunity Location of Development
    - Optional Mode Used
    - Pollution Effect of Optional Mode
5. Development inflicts external costs on neighbourhood:
    - Change in Use-Value of Other Residential Property
6. Development interrupts and breaks neighbourhood networks:
    - Extent of Interaction
    - Value of Interaction
7. Development reduces consumption of gasoline: Contributes to National Energy Goal:
    - Opportunity Location of Development
    - Opportunity Mode Used
    - Gasoline Consumption
    - BART's Energy Consumption Due to Additional Load
8. Development suppresses the resident's sense of control over the environment, reduces sense of responsibility for it, defies man's quest for emancipation, increases anomie, and the news of it all spreads the consequences past Rockridge to affect the city, the region, etc.

Summary:

The costs and benefits presented in Table 1 describe some of the first order consequences of implementing a land-use plan which responds to the BART potential. An evaluation of the plan on the basis of its social costs and benefits and its contribution to the efficiency with which land resources are used is highly problematic even when its equity attributes are ignored and when little value is placed on the nebulous psychological and political dimensions of the impact. The conclusions of the analysis are highly sensitive to the choice of opportunity location for development; additionally, this choice can in part be determined by the policy-maker. Should reliable information be developed regarding alternative locations for the 1,500 units projected for Rockridge and should the numbers yield tentative conclusions, then as other impacts on the region were introduced the difficulty of quantifying them would increase considerably and there is no guarantee that the consequences of these nebulous impacts are minor. Listing the subtler impacts tends to evoke emotive responses which overshadow rational consideration of their direct contribution to social welfare. The sense that the intangibles or non-measurable consequences are important can lead to their evaluation on the basis of the principle involved.

Scientific-technical intelligence, when used to develop lists of consequences and to obtain a sense of their value by trying to estimate or guess at the prices a market would place on them, cannot resolve by itself the troublesome aspects of the land-use problem. Many consequences are intangible or non-measurable and so guesses based on intuition must be made as to their magnitude. By means of analysis, it was shown that intuition, in the case of assessing the transportation savings, can lead to erroneous conclusions. The evaluation of consequences which can be quantified in theory are highly sensitive to assumptions or views regarding what would be the case if development did not occur in Rockridge and relatively small changes in these assumptions can radically alter the conclusions. Some intangibles are very important: the view one has of the appropriate means of effecting land-use changes will determine how the intangible is valued. These views vary and therefore agreement as to how the intangible is to be valued is unlikely and the conclusions reached from analysis of the quantifiable consequences are not likely to be sufficiently robust to support one alternative with enough force to withstand differing viewpoints on how the loss of neighbourhood quality, for instance, is valued. Furthermore, the way the limits to the problem are set by the planner are likely to determine the conclusions of the analysis.

The classical approach of cost/benefit analysis has been useful in dispelling the myth that development of one station area will necessarily cause great savings in transportation costs. It has demonstrated the sensitivity of the conclusions to several critical assumptions and has revealed some of the basic issues on which resolution of the land-use conflict rests. Listing some of its far-reaching consequences in the kind of setting public land-use decisions are usually made, I believe, evokes emotive responses which leads one away from evaluating them on the basis of their contribution to social welfare to an evaluation of their principles.

CHAPTER 11

CONCLUSIONS

The Rockridge situation has been described in three ways. The history of Rockridge and the conflict as it was directly observed was presented in Part One. The market's response was discerned by means of econometric analysis in Part Two. The planning theoretical issues were outlined in Part Three. The aim now is to bring the sections together and formulate some general conclusions regarding the nature of the problem of planning land-use changes.

Having reviewed the Rockridge situation from several vantage points, we have yet to describe what the Rockridge land-use problem is. This can only be done here in the last chapter, for in saying what the problem is we bound it, point to the solution and leave the troublesome situation. We have explored the consequences of changing the boundaries of the Rockridge problem and have seen how the rationally derived recommendations can change. We conclude from this that the examination can continue and that a viewpoint, an ideological stance, or some personal reaction to the situation is needed to close the debate and to solve the problem.

In Chapter 8, we suggested that putting forth a planning problem involves stating the problem, as well as the belief that the problem can be resolved and the planner's desire to stand by the solution and recommend the means to bring it about. Our discussion of the Rockridge planning problem is organized according to these three aspects.

Statements of the Rockridge Land-Use Problem:

We start by recognizing that the Rockridge land-use problem has already been solved, in fact it has been solved three times: once by the "round table" discussants in 1969, once by Gruen & Gruen Associates in 1972 and then, finally, by the Oakland City Council in 1975. We now want to show how the problem statement can be expanded. The Rockridge land-use problem can be stated in at least the following alternative ways:

1. Development is likely to occur in Rockridge. The rush will bring developments which do not truly exploit the area's potential. Less development will occur than could occur in the long run. The maximum intensity of development should be sought. The problem in Rockridge is one of overcoming pre-emptive developments. The solution to the land-use problem is attained by zoning down some parts of Rockridge, zoning up other areas and allowing high contrasts in density until demand for really intense development increases.

2. Development is likely to occur in Rockridge. The residents should have some input into the decision-making process. The residents do not currently know what options are available and what the means are for implementing them. The problem is one of the residents' lack of knowledge of alternative means and ends of land-use plans. The solution spells out the alternatives clearly. The problem is now solved because the residents are informed and can act in the political process to secure their own goals.

3. Development does not appear imminent because no developer is coming up with proposals. The residents are, however, worried and are creating an embarrassing hindrance to the development-oriented city council. Residents should not be marching on city hall and the conflict situation ought to be dissipated. The problem is one of stopping the protest. The solution is found by giving in to the residents' demands for down zoning until a real development potential emerges.

4. Given that BART has changed the access surface, the region's spatial structure is not as efficient as it could be. Planning should increase the efficiency with which land is used to the maximum extent possible. The problem is one of increasing the efficiency of land-use by effective channelling of development. The solution is to convert inefficient inner-city uses to high density

highrise apartment buildings, offices and possibly shops.

5. Development is not imminent but the potential ought to be created for some future point in time. Given the conflict situation as it prevails, this potential will not emerge. The problem is one of dissipating the conflict in order to allow a compromise to be reached at some future point in time. The solution removes the conditions that create the conflict.

These are only a few ways in which the Rockridge land-use problem can be stated. The first three correspond to the statements and solutions that have already been advanced. Statement number 3 is the one that appears to be in effect at this point in time. The Oakland city councillors are generally development-oriented. It seems unlikely that they would not support any project that appeared to be feasible and which would bring more upper middle-income people and more tax dollars to the City of Oakland. The Oakland General Plan once called for high density residential buildings next to BART, but the City Council over-ruled the residents, its City Planning Department and the Planning Commissions recommendations against allowing the "Lucky's" supermarket to build its highly land-intense operation. The precedent has been set: at some future point in time the Council may find that the people of Oakland cannot afford to keep a particular highrise developer out of Rockridge. Problem statement number 3 has been articulated with the councillors' inferred motives in mind.

In our analysis of the boundary problem, we discovered that large-scale development in Rockridge does not offer the benefits that are expected. Once the opportunity location concept was introduced, the resulting regional perspective altered our evaluation of the Rockridge potential: development elsewhere was a better idea.

In our discussion of the means of bounding problems, we asserted that a land-use plan affects social welfare not just by how it changes the commute costs of the majority, but also by how it affects the residents' experience of city life. In the "Reactions" chapter in Part One, we saw that a substantial proportion of the residents thought that the BART-induced potential would cause hardships by reducing the area's quality as a place to live. As news of the potential impact spread, alarm grew possibly out of proportion to the reality. As a result of this emergence of community concern, any change appearing BART-related would generate concern out of proportion to that which such change in the environment would merit. The city planners' impact statements showing the large potential for change led the residents to see small changes in a symbolic light. They are the beginning of the end for the community: they constitute a move by outside commercial interests into the neighbourhood.

The city planners have created this situation by first showing how the maximum development strategy could be realized and then by assuring everyone that great changes were likely if nothing were done. Given that the Rockridge situation has been affected in this manner, it is likely that any small savings in the transportation resources that could be attributed to large-scale development would create fewer benefits than costs. Since we cannot support any interpersonal utility comparisons with any empirical or theoretical argument, we must act as city planners and imagine our own experiences as beneficiaries or losers as a result of large-scale redevelopment. We believe that the costs of the development option exceed the benefits.

Problem statement 4 emerged in considering the regional perspective. It is the statement that phrases the problem in the broadest regional context while keeping it bound to locational and development-oriented considerations. Study of the best use of the region's land, given that BART has improved the access surface, suggests keeping Rockridge as it is and focussing attention on the other parts of Rockridge that offer better access to the Oakland and San Francisco central business districts. Such a strategy would advance social welfare by reducing the amount of resources that are wasted on transportation and by leaving established communities in tact. There is much land surrounding the Oakland business district and near some of the other BART stations that could be enhanced by high density residential developments.

The explicit introduction of the regional perspective has not favoured the intensive development option. This conclusion was reached even after the assumptions were slanted to favour the development option. It follows _a fortiori_ that fairer assumptions would support the "develop elsewhere" strategy with greater force.

Problem statement 5, the last problem statement, considers even broader boundaries to the Rockridge land-use problem. It suggests that at some future point in time the situation may be such as to make large-scale developments in the Rockridge station area desirable when viewed from a regional perspective. This conclusion is not hard to support provided that the population of the Bay Area can be assumed to keep on increasing.

Implied in this problem statement is the problem referred to in statement 3: the conflict is believed to be undesirable and should be resolved. However, if a less cynical view is taken, the problem statement suggests that the cause of the conflict be removed. All we need to do is find the means for removing the cause of the conflict and then look to a happy future in which compromises are possible, in which local residents are satisfied, and in which the region's, the city's and society's welfare is advanced.

The Means for Effecting the Solutions:

Accepting a planning problem implies a belief that it can be solved. Since the first three solutions have been implemented, we can judge the effectiveness of the proposed means without having to speculate. The City Council's solution, however, calls for some discussion. If the down-zoning of Rockridge was intended as only a temporary appeasement of the residents, then this intention will not be realized. The econometric study showed that the market has responded to the conflict and the demand for houses near the station is reduced. While a potential for conflict remains, developers are likely to stay out of Rockridge to avoid costly debates and postponements. The temporary appeasement should turn out to be permanent.

The "develop elsewhere" option would increase land-use efficiency. City planners, however, do not implement development and the feasibility of attracting developers by means of land assembly programs and advertising cannot be assessed in any depth in this paper. One solution does suggest itself: if developers are expected at some future point in time to become interested in BART and to consider Rockridge first, then the down zoning of Rockridge would cause them to look elsewhere. By down zoning Rockridge developers may be encouraged to seek out socially more desirable parts of town. By down zoning Rockridge developers may move on the Lake Merritt station area, a location more accessible to the region's centers of interest than Rockridge. The problem as described in statement number 4 does appear solvable and the statement appears practical. Action on it would remove development pressure and conflicts from Rockridge for a period of time.

The last problem statement would allow new intense developments in Rockridge at some future date, and it seeks to have this development implemented without conflict. By looking at some of the characteristics of the conflict, we may be able to gain a handle on its causes. The first characteristic is created by the basic issue: people living in single-family houses do not like to see apartments built next door. This in itself will not be changed by any plan. People owning houses may, however, welcome the development potential if they realize and could be sure that land values would increase and that the prices of their houses would rise.

This form of solution would not resolve the externality problems created by intense development. Some form of control over the development continues to be needed. Sharp changes in scale should not be permitted. The development must be restricted to a limited area. An urban design solution is called for.

This may sound fine theoretically, but the solution raises a second issue. An urban design solution will not alleviate the fears of the residents living outside the development area unless they believe that the plan will be adhered to. The issue is one of developing the residents' trust. If the continuous end game perception of the situation remains, if each project is seen as the beginning of a trend which will continue and spread, then the community groups will never willingly submit to what appears to be a false compromise, and the beginning of the end of their neighbourhood. The urban design solution will also not work if the City Council votes against the planners' advice on specific issues, i.e., if the "Lucky's" supermarket episode is recreated.

How can Rockridge residents acquire the necessary trust in their city's political and planning institutions? This is the core of the entire Rockridge land-use problem, and inevitably policy suggestions will be weak. A fundamental change in the City Council's attitude towards citizen group activity is needed. We have shown earlier in this paper that a development-oriented city council which tries to promote development sets the scene for a land-use conflict by disregarding the residents' wishes to be heard and to have a reasonable amount of control over their neighbourhood. The empirical section showed that the conflict in expectations affected the market for houses in the station's vicinity, reduced demand for the land and caused property prices to decrease. We believe that a council which is responsive to the citizen groups and which turns some control of the neighbourhood over to the residents will, in fact, be promoting development by stabilizing the situation and decreasing the propensity for conflicts to emerge.

At some future point in time, if the population of the Bay Area continues to increase and if the capacity of BART to handle passengers also increases, then the development alternative does offer city wide benefits; but the benefits will not be gained while the politics in Oakland are such as to give rise to land-use conflicts.

The Planner's Desire to Support a Given Course of Action:

The conclusions presented in this chapter lead to a fresh look at the boundaries of the Rockridge problem, which will help define the problem by considering not the ends or the means of plans but the kind of action that this planner would be willing to stand behind. We recognize that the basic issue concerns City Council's history of promoting the developers' and business community's interests at the expense of the residents. The Rockridge conflict can be seen as a desirable occurrence, as one which may eventually lead to changes in the City Council's responsiveness. The problem now becomes one of spreading the tension, that developed in Rockridge, across the city. This change would generate a political force which could then change the way the use of land is determined in Oakland.

With this view of the problem, what action would a planner wish to take and what posture could he adopt? The answer depends on the planner's relationship with his or her city council and the attitude of the councillors. If the planner serves at the pleasure of a mayor who seeks development at any cost, then the planner may try and guide the decision-makers' attention towards the inefficiently used inner-city areas. Development here would further the goals of land use efficiency, help reduce pollution and congestion and leave a healthy community intact. If the planner feels that this strategy has no chance of success, that the social costs of disrupting a neighbourhood will not sway the mayor's view of the problem, then the planner who advises the community to enter the political process and "Go plan your own community" is offering sound professional advice.

The problem and solution may change if the mayor and city council seriously want professional advice. If the council is sincere in its desire to open up the decision-making process and allow the residents to have an effective say in the way their neighbourhood is shaped, then a compromise plan may be feasible. The problem becomes one of urban design. The planner will try to design that plan which offers the least disruption to the physical environment of the remaining low-keyed residential areas, a guarantee of high prices to the sellers of land to be assembled and a guarantee that the boundaries of the urban design plan will not be broadened at a later date. The process of designing the new spatial structure must include the concerned resident. Otherwise, the fear that the neighbourhood will become an undesirable place to live will prevail, conflicts are likely and the market will respond to these expectations and political forces by showing a reduction in activity in the station's vicinity, reducing housing prices and eliminating the development potential.

REFERENCES

Chapter 1

1. Dykstra, Development of Oakland, unpublished Master's Thesis, University of California, 1967, p. 136.

2. Oakland Planning Department report, Rockridge Station Area, 1969, p. 14.

3. Oakland Planning Department report, Alternatives for Rockridge, 1974, p. 25.

Chapter 2

1. Grefe, R., Smart, R., A History of the Key Decisions in the Development of the Bay Area Rapid Transit (BART), 1975, p. 19.

2. Claremont Press, Oakland Telegraph, July 8, 1960, p. 1.

3. Warring, Dean, term paper published in the Oakland Telegraph, November 17, 1956, p. 6.

4. Claremont Press, Oakland Telegraph, December 22, 1965, p. 1.

5. Ibid., January 25, 1963, p. 1.

6. Ibid., February 25, 1963, p. 1.

7. Ibid., January 28, 1966, p. 1.

8. Oakland Planning Department, The Transit Problem in the East Bay, 1950, p. 29.

9. Claremont Press, Oakland Telegraph, January 6, 1961, p. 1.

10. Ibid., October 1, 1965, p. 1.

11. Ibid., October 8, 1965, p. 1.

12. Ibid., January 14, 1966, p. 1.

13. Ibid., April 22, 1966, p. 1.

14. Ibid., March 31, 1967, p. 1.

15. Oakland City Planning Department, Report 200: BART Impact, July 1969, p. 2.

16. Alan M. Voorhees and Robert Gladstone Associates, The Impact of Rapid Transit, Washington, D.C., 1962, p. 53.

17. Oakland City Planning Department, Report 200: BART Impact, July 1969, p. 2.

18. *Ibid.*, p. 3.

19. Oakland City Planning Department, Options for Oakland, 1969, p. 12.

20. *Ibid.*, p. 13.

21. *Ibid.*, p. 19.

22. Oakland City Planning Department, Report 200: BART Impact, July 1969, p. 4.

23. *Ibid.*, p. 5.

24. Oakland City Planning Department, Rockridge Station Area, 1969, p. 22.

25. *Ibid.*, p. 28.

26. Telephone interview with Ken Natlein in February, 1976.

Chapter 4

1. Gruen & Gruen Associates, Economic and Social Analysis of Three Oakland BART Station Areas, July, 1973, p. 1.

2. *Ibid.*, p. 2.

3. *Ibid.*, p. 1.

4. *Ibid.*, p. 120.

5. *Ibid.*, p. 123.

6. *Ibid.*, p. 224.

7. Claremont Press, Oakland Telegraph, November 15, 1973, p. 1.

8. *Ibid.*, p. 1.

9. Oakland City Planning Department, Alternatives for Rockridge, p. 1.

10. Kotkin, J., Bay Guardian, November 15, 1973, p. 4.

11. Ibid., p. 4.

12. Ibid., p. 4.

13. Claremont Press, Oakland Telegraph, March 6, 1974, p. 1.

14. Ibid., March 13, 1974, p. 1.

15. Rockridge Community Newsletter, April 1974.

16. Claremont Press, Oakland Telegraph, November 7, 1974, p. 1.

Chapter 5

1. Richard Muth, Cities and Housing, University of Chicago, 1971.

2. Ibid., p. 25.

3. Laurence D. Schall, A Note on Externalities and Property Valuation, Journal of Regional Science, Vol. 11, No. 1, 1971, p. 101.

Chapter 6

1. Douglass Lee, Jr., Part III, Land Use and Investment, Vol. 1, Econometric Studies, Institute of Urban and Regional Development, University of California, Berkeley, June 1973, p. 68.

2. David E. Boyce, Detection and Estimation of Transportation Impact on Residential Property Sales Prices, paper presented at Taipei, Taiwan, October 20, 1975, p. 15.

Chapter 8

1. C. J. Lewis, An Analysis of Knowledge and Valuation, Open Court, La Salle, Illinois, 1962, pp. 366-367.

Chapter 9

1. John Friedmann, Notes on Societal Action, Journal of the American Institute of Planners, September 1969, p. 312.

2. M. Merleau-Ponty, Phenomenology of Perception, New York, Humanities Press, 1962, p. viii.

3. William Alonso in a lecture given at the University of California, Berkeley in the Fall of 1972 (quotation from memory).

4. C. I. Lewis, An Analysis of Knowledge and Valuation, Open Court, La Salle, Illinois, 1962, p. 254.

5. Neitzsche, The Will to Power, ed. Walter Kaufmann, New York, Vintage, 1967, p. 245.

6. H. Marcuse, quoted in J. Habermas, Toward a Rational Society, Boston, Beacon Press, 1971, p. 84.

7. J. Habermas, ibid., p. 111.

8. M. Ozbekhan, The Triumph of Technology: "Can" Implies "Ought", p. 209.

9. Michael Teitz, Towards a Responsive Methodology: The Future of Planning Methods. Unpublished paper prepared for the Planning Education Symposium, University of North Carolina at Chapel Hill, April 1974.

10. Martin Kreiger, Is Social Policy Research Worthwhile? Institute of Urban and Regional Development, University of California, Berkeley, 1972, p. ii.

11. John Dyckman, The Concept of Standards in Public School Planning. Unpublished Ph.D. Dissertation, University of Chicago, December, 1957, p. 25.

12. Ibid., p. 39.

13. Karl Mannheim, Ideology and Utopia, Harvest, New York, 1936, p. 100.

14. Ibid., p. 189.

15. Ibid., p. 191.

Chapter 10

1. Taken from a June 1975 conversation with Mr. T. Highfield, Director of Standards, Alameda County Assessor's Office.

2. Grefe, R., Smart, R., A History of the Key Decisions in the Development of the Bay Area Rapid Transit (BART), 1975, p. 13.

3. Ibid., p. 13.

SPRING 1978

J

RETURN TO: ENVIRONMENTAL DESIGN LIBRARY
210 Wurster Hall 642-4818

LOAN PERIOD 1	2	3
4	5	6

ALL BOOKS MAY BE RECALLED AFTER 7 DAYS.
Please return books early if they are not being used.

DUE AS STAMPED BELOW.

UC BERKELEY
DEC 19 2003
ENVI

FORM NO. DD 13
5M 1-03

UNIVERSITY OF CALIFORNIA, BERKELEY
Berkeley, California 94720–6000